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A. C. A. Commercial Vehicle Contest.

First Official Trial in America of the Capabilities of the Commercial Automobile is Brought to a Successful Close—Steam, Gasoline and Electricity the Motive Powers.

WHEN eleven out of the fourteen announced entries in the Automobile Club's contest for commercial vehicles actually appeared on Wednesday morning last week at the scene of the start on Fifty-eighth Street, in New York in

the out-of-town vehicles arrived in the city, little had been heard of the preparations, and the photographs and complete descriptions of each vehicle, which were to have been sent to the Club in advance, according to the rules, had not been forthcoming.

appointed observers appeared in the evening at the club rooms to receive instructions.

The morning scene on Wednesday was lifelike in its imitation of real automobile business work. The square block of stone, weighing 10,000 pounds, on the heavy



STARTING THE CONTESTANTS IN THE COMMERCIAL VEHICLE TRIALS FROM THE PLAZA, NEW YORK.

front of the club house, there was rejoicing. for in club circles it had not been considered at all certain that a sufficient number would be ready to insure a show of competition in each class.

Until a few days before the event, when

On Tuesday evening, however, doubts were finally dispelled when all the heavy trucks rolled up with their various, more or less picturesque and bizarre loads at the weighing and supplies station at Forty-ninth Street and Eighth Avenue, and most of the

Herschmann steam truck, built at the Columbia Engineering Works in Brooklyn, looked as formidable as could be desired for a demonstration of heavy traction. The British-built Coulthard truck entered by the Simmons ironware company, bore wit-

ness of the years which have been devoted to steam trucks in England in the superior finish manifest in its lines. An air of "we know just what we are doing, having done it before" did not fail to impress the spectators, laymen as well as engineers. And, to carry this impression further, this machine, in addition to its dead load of bags and bars, took on some seven or eight men interested in its behavior and carried them over the route, so that no one should mistake the occasion or fall into the belief that the test would be likely to strain the capacity of the car.

Much interest centered in the Morgan steam truck, built at Worcester, Mass., and driven by its designer and builder, Ralph L. Morgan, who had been the prime mover in suggesting the contest to the Club. A second Herschmann truck completed the number of heavy steam cars with smokestacks proclaiming the use of anthracite coal or coke for fuel, and with the steam exhaust so disposed that this feature, too, lost all offensiveness, especially with the aid of the July temperature prevailing during all of the contest, which quickly dissolved all mist into invisible vapor.

Extremely business-like was the appearance of the two heavy gasoline motor trucks sent up from Philadelphia by the Union Motor Truck Company, and upon which rested the burden of defending the internal combustion motor in competition with steam for heavy traffic, and also that of demonstrating the practicability of a driving system which differs radically from anything else in use, and has never been shown in a public contest before. Carrying a bulky load of patent horse feed in bags the larger one of these vehicles, a stake truck, with its entire motor and transmission mechanism hung on a rigid iron truss frame below the vehicle body, looked unconventional, interesting and daring to the spectators, who had never seen the like of it before. And the smaller truck of similar pattern, which has been in use in Philadelphia as a "baggage express," was a close second as an object of well-wishing interest not unmixed with misgivings.

All the other cars, enumerated and briefly described in the accompanying summary, were of lighter caliber, and plainly evolved from the pleasure automobile by mere changes of the vehicle body. Only one electric storage battery machine was among them, a Waverley delivery wagon in class 1, carrying a dead load of 1250 pounds; but hovering around the starting place were seen several of the well-known heavy electric trucks, apparently in discharge of their daily work of hauling heavy loads around New York City, though it was commonly surmised that they had been sent to that particular locality in order to be observed, "lest we forget" that some manufacturers of heavy trucks had refrained purposely from participating in the Club's event, but were nevertheless very strongly in the field for this class of automobile manufacture.

Data of Starters in A. C. A. Commercial Vehicle Trials, May 20 and 21, 1903

No.	Class	Type	Maker	Address	Motive Power	Fuel	H.P.	Tare	Load, lbs.	Contestant	Observer	Operator
1	5	Truck	T. Coulthard & Co.	London, Eng.	Steam	Coke	20	14,225	10,000	John Simmons Co.	James W. Manson.	Edw. Tanner
2	3	Stake Truck	Union Motor Truck Co.	Philadelphia.	Gasoline	Gasoline	20	5,810	3,240	Maker.	M. C. Krarup	Edw. Brummel
3	3	Baggage Express	"	"	"	"	16	4,525	2,710	"	P. M. Heldt	W. T. Ford
5	1	Delivery Wagon	International Motor Car Co.	Indianapolis.	Electricity	"	6	2,420	1,210	Banker Bros.	H. P. Haynes	J. P. Kirkpatrick
6	5	Truck (Herschmann)	Columbia Eng. Works.	Brooklyn.	Steam	Hard Coal	35-40	14,500	10,000	Arthur Herschmann	C. E. Lucke	Wm. Morgan
7	4	"	"	"	"	"	15	10,225	3,805	"	H. G. Chatain	E. G. Smith
9	4	"	Morgan Motor Co.	Worcester, Mass.	"	Coke	20	11,160	5,740	Maker.	Edw. H. Phipps	R. L. Morgan
10	1	Delivery Wagon	Mobile Co. of America	Tarrytown, N. Y.	"	Gasoline	4 1/2	1,500	775	Osborn Pharmacies	Victor R. Loughhead	E. P. Washburn
11	2	Open Delivery	Knox Automobile Co.	Springfield, Mass.	Gasoline	"	16	2,300	1,250	Maker.	Joseph Tracy	Harry Knox
12	2	Cov'd	"	"	"	"	8	2,070	1,245	"	W. C. Pendleton	Frank Fowler
14	2	"	Blaisdell & Co.	Brooklyn, N. Y.	Steam	"	10	3,530	1,720	"	Albert C. Clough	Blaisdell

Nos. 4 and 8 did not start. No entry for No. 13.

Table of Performances in A. C. A. Commercial Vehicle Trials

Departures, Arrivals and Consumption on Wednesday, May 20													Departures, Arrivals and Consumption on Thursday, May 21																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
No.	Name	Class	First Stage Elapsed (20 miles)	Time	Dep.	Arr.	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Consumption figures not yet officially verified.

Duly provided with maps of the route, printed instructions and annotation cards, the official observers of the steam cars were kept busy from 8.30 till 9 o'clock attending to their duties of measuring and noting the time for raising steam from "all cold," the amount of fuel and water supplies, and the replenishment of tanks, while those assigned to the less onerous task of watching the gasoline vehicles found time to look around and shake hands and discuss construction and prospects of success. John A. Hill, chairman of the Club's contest committee, Secretary Butler and a few interested Club members lent official coloring to the occasion, while all the participants got ready in easy "go-as-you-please" style—informally but not haphazardly—for the starter's signal. True to the club's traditions of promptness, the eleven competitors began to file down the asphalt at 9 o'clock, and at 9.46 the last one had disappeared from view of the little crowd of onlookers who, mostly by

improvement of heavy traction machines, and often expressed the conviction that it was only a question of a short time before the horse would have to abandon this field of usefulness.

It was freely admitted that no team of horses could undertake to travel 30 or 40

man gives free vent when pleasure automobiles are stalled in the street. But while the procession of trucks over the Amsterdam Avenue hills doubtless produced a strong impression, the route presented such a succession of difficult grades, and the loads carried were so near the maximum limits that the test on the whole was rather too severe for an infant industry.

The proportion between weight hauled and horse-power at disposal varied largely in the different classes, in such manner that very much greater proportional strains were imposed on the engines of the heavier vehicles in the third, fourth and fifth classes than on those in classes 1 and 2. And the tabulated results show that this disproportion had its serious effects which must detract greatly from the value of the whole demonstration unless those interested in finding the truth study the performances much more closely than they can be expected to do. The serious breakages occurred almost exclusively in those vehicles in which the work demanded per horse-power exceeded ordinary business requirements, while the lighter vehicles came through without difficulties.

The disproportion referred to is indicated in the foregoing list giving the power of each engine opposite the combined weight of vehicle and load.

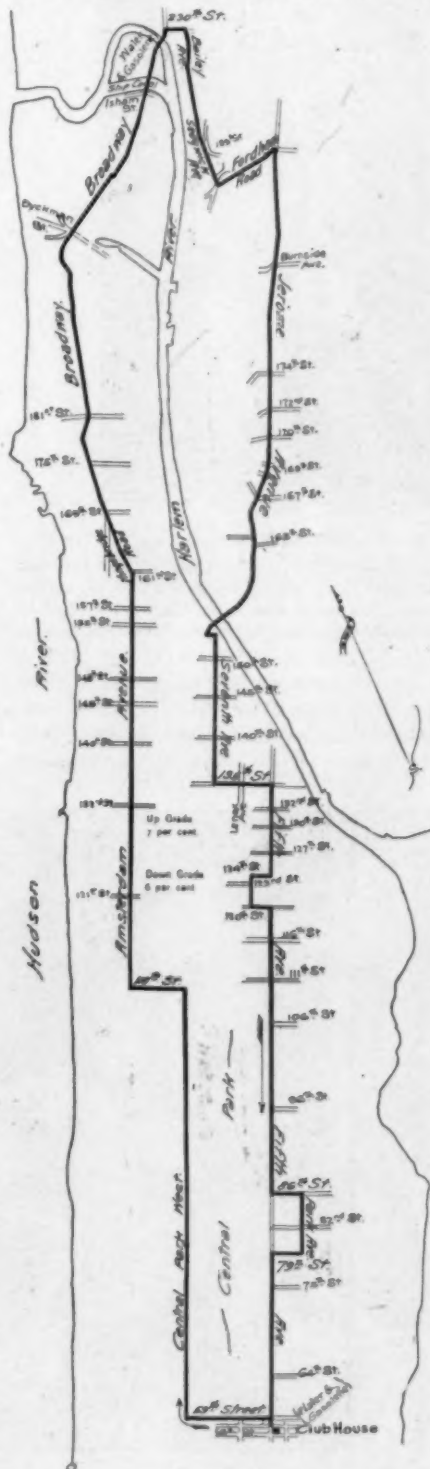
Assuming that the dimensions of component parts of engines were calculated

TOTAL WEIGHT AND WEIGHT PER H. P.

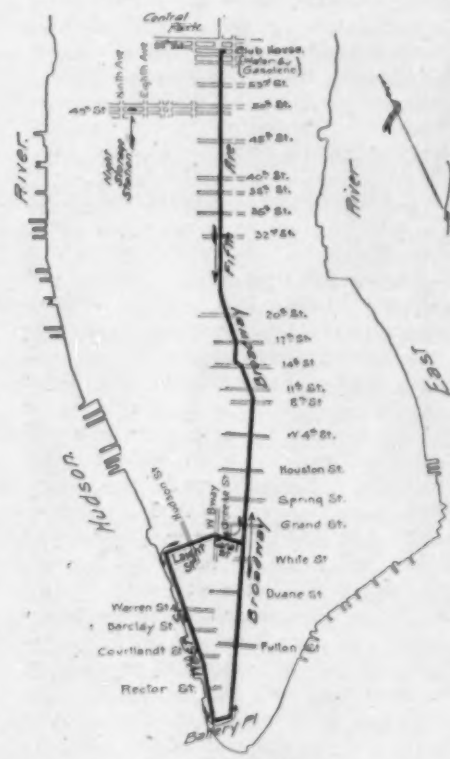
Class 1			
	H.P.	Weight	Lbs. per H.P.
Waverley Electric	3.630	500	
Mobile Steam	4½	2,275	500
Class 2			
Knox Gasoline	16	3,550	200
" "	8	3,315	400
Blaisdell Steam	10	5,250	500
Class 3			
Union Gasoline	20	9,050	450
" "	16	7,235	450
Class 4			
Morgan Steam	20	16,900	850
Herschmann "	15	14,030	1,000
Class 5			
Coulthard "	30	24,225	800
Herschmann "	25	24,500	1,000

chance, here witnessed the beginning of the first event involving public recognition of the most important branch of automobile construction. Others, more directly concerned, mounted their touring cars, which had been kept in waiting along the curb of the Plaza, and set out to follow the route of the contest and watch the results.

When inviting the industry and users of commercial vehicles to participation in the contest, the Club had stated that the event had been organized "with a view of affording an opportunity for the various types of light and heavy delivery wagons and motor trucks to demonstrate that they can be successfully used in commerce at less cost and to greater advantage than the present horse-drawn vehicles." The weather was propitious for making this demonstration, as a temperature of 80 to 90 degrees on both days exerted its baneful and visible influence on all the heavy draft animals observed at work along the route, in sharp contrast to the steady pull of the machines over the numerous severe inclines. This was a feature which was clearly appreciated by the onlookers. Whenever one of the heavy cars made a halt for one reason or another, it was soon surrounded with a crowd of persons who evinced a friendly interest in the



First Stage.



Second and Third Stages.

ROUTES OF COMMERCIAL VEHICLES IN A. C. A. CONTEST.

miles in a working day with such loads as were here hauled, or for that matter without any load. The attitude toward troubles and repairs in automobile trucks had nothing of the derision to which the average working-

nearly in proportion to the indicated horsepower, some reason is seen why the steam vehicles, being frequently called to develop three times their normal power on the steep grades, fell victims to

such as the bursting of steam pipes, which might have been avoided by lower speed gearing or lighter loads; and also why the lighter vehicles with their proportionately larger dimensions of component parts car-

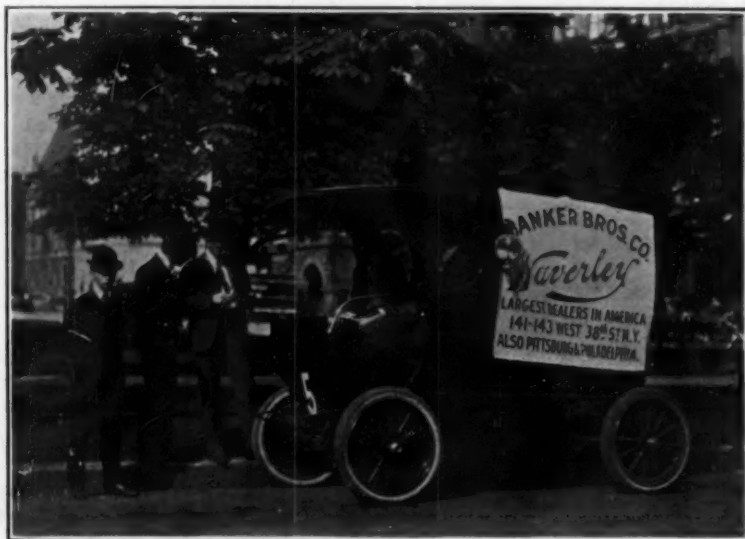
run before. The bearings, being new, heated up considerably under the heavy load and the long continuous run.

The Coulthard coke burning truck, which weighed 14,225 pounds and carried a load

contest committee assumed responsibility for the defect in the course, which could not be foreseen. Although 230th Street is macadamized, a soft spot had developed in it where overflow from watering carts filling at the fire plug had kept the street constantly wet. Deducting this non-penalized stop, the Coulthard, No. 1, covered the 20-mile stage, up hill and down, over paved and earth roads, in 3 hours 7 minutes, and the second stage of ten miles to the Battery and back through the congested district in 1 hour 48 minutes on the first day. On the second day it fractured a steam pipe half a mile down Bailey Avenue from Kingsbridge on the first stage and lost 5 hours 56 minutes in replacing it, and made two stops to change gear. Deducting the stop to replace the pipe, which split across close to the connection, 3 hours were consumed in making the 20-mile stage, including four official stops required by the rules.

On the first stage the first day the Union gasoline stake truck, No. 2, lost 50 minutes by getting off the course. The bearings heated, it developed a hot box and the fastening of the radiator sheared off. On the second day, when backing down the short grade in Kingsbridge to get a fresh start, the driver suddenly threw in the forward gear to prevent backing into a train at the foot of the grade and bent the crank pin, so that the truck was withdrawn from the contest although it finished the course without its load.

The only serious accident in the contest occurred during the first stage on the sec-



THE ONLY ELECTRIC VEHICLE IN THE CONTEST.

No. 5.—Covered electric delivery wagon built by Waverley Department of International Motor Car Co. Driven from 20-cell Sperry battery of 100 ampere hour capacity. Overloaded 60 per cent in trials. Weighed 2,420 lbs. without load and carried 1210 lbs. crushed trap rock in barrels. Dimensions of load portion of body, 2 ft. 9 in. wide by 4 ft. 6 in. long back of seat, and 4 ft. high. Wood wheels fitted with G & J detachable pneumatics. Maximum speed 12 to 14 miles.

ried the honors of the event, so far as the records were concerned, and in the popular estimation, although the occasion had been arranged more especially with a view to demonstrating the merits of the heavier types.

of 10,000 pounds, proportionately greater than any of the other vehicles in the contest, sank one of its rear wheels nearly hub deep in sand on the short, sharp incline on

Troubles that Developed on the Heavy Vehicles.

Of the eleven vehicles that started on Wednesday five were delivery wagons and six were trucks. Four of the delivery wagons covered the twenty-mile stage to 230th Street once and the 10-mile stage to the Battery and back twice on the first day, and five of the trucks completed the first stage once and the second stage once, all without stops. The Blaisdell covered steam delivery wagon, which started last at 9:46 A. M., withdrew on the first stage, having caught fire and broken the auxiliary hand pump lever. This wagon did not start on the second day. The Herschmann seven-ton steam truck which started at 9:06 A. M. developed a leaky boiler about half way out on the first stage and did not finish. The driver and assistants on it spent the remainder of the day and part of the night repairing the boiler, and on the second morning the truck was started again at the 110th Street hill and completed the first stage, returning to the starting point at about 1 o'clock. This big truck, which carried a single block of stone weighing five tons, had left the shop for the first time the night before the trials and had not been



ONLY LIGHT STEAM DELIVERY WAGON IN CONTEST.

No. 10—Steam light delivery wagon, built by the Mobile Co. of America. Entered by the Osborn Pharmacies, New York. Driven by 4½ H.P. engine and using gasoline as fuel. Weighed 1,500 lbs. without load and carried 775 lbs. load. Wire suspension wheels fitted with International pneumatic tires.

230th Street at Kingsbridge, and 2 hours 10½ minutes were lost in extricating it. But it was not penalized for this, as the

ond day, when the baggage express wagon made by the same company came to grief on the long down grade on Broadway near

190th Street. The tire on the right drive wheel came off, and the truck swerved toward the curb, and in bringing it back too quickly into the straight course, it was overturned, bending the front axle, dishing the rear wheel and injuring the front spring. Observer P. M. Heldt was thrown out with such force that his ankle was injured so that he was removed to a hospital. The street railroad wrecking wagon was telephoned for and the truck was righted and removed to the left of the car tracks.*

The Herschmann steam baggage wagon, No. 7, used by the Adams Express Co., in New York, covered the first stage on Wednesday without any stops, and the second stage with fourteen stops on account of traffic. On the second day it made the twenty-five required stops on the two stages, and three stops on the second stage on account of traffic.

The Morgan coke burning steam truck, No. 9, operated by Ralph Morgan, consumed 6 hours 29 minutes on the first stage on Wednesday, having difficulty in mounting the grade in Kingsbridge, which it finally climbed backward on the reverse gear, and stopping to repair a broken feed heater pipe. The feed heater pipe broke again on Thursday during the first stage, requiring two stops of a total duration of 4 hours 40 minutes. This, combined with seventeen official stops, consumed 8 hours 9 minutes on first stage. Eight official stops were made and the necessity for using cold feed kept down the steam pressure on the second stage, which was completed in 4 hours 43 minutes.

With the exception of the Blaisdell, the

years, and have had the benefit of prolonged experience. The Blaisdell differed in this respect that it was a new kerosene-fired steam wagon, still in the experimental stage, and trouble arose at the point where

sterdam Avenue was found quite severe for all weights exceeding 5,000 pounds. Near the bottom of this hill the heavy Herschmann truck with its 10,000 pounds load, was first stalled with a leaky boiler, which



GASOLINE OPEN DELIVERY WAGON THAT MADE BEST TIME.

No. 11.—Open delivery wagon, built by Knox Automobile Co., of Springfield, Mass. Driven by double cylinder air-cooled gasoline motor of 16-H.P. Weighed 2,300 lbs. without load, and carried 1,500 lbs. pig lead in trials, but has capacity of 1,800 lbs. Wood wheels fitted with Dunlop detachable pneumatic tires.

its novelty was most pronounced. A fuel leak caused a conflagration, and its pump broke, causing its retirement.

Road Grades and Surfaces.

The difficulties of the route commenced

afterwards compelled its withdrawal at 160th Street and Amsterdam Avenue, after it had successfully climbed the seven per cent. grade on that thoroughfare. The traffic on this portion of the route was at no time troublesome, except that it was frequently necessary to get out of the way of street cars, whose drivers usually had some comment to make in passing. But for the abundance of space the task of the second day, including stops on the way down into the trough of 125th Street as well as going up from it, might have been rendered quite difficult, for dry and comparatively clear as was the stone pavement, the stops and starts of the heavy cars appeared sluggish on these grades, though probably no more so than they ought to be in heavy transportation work, and certainly not nearly as painful to look at as similar starts and stops with animal power. But if the day had been wet and the surface less clean than it was, the holding qualities of brakes and tires would have been subjected to a crucial test, more searching than was subsequently applied on the short grade on 230th Street and on the slippery asphalt of Fifth Avenue at 35th Street, where copious sprinkling had taken the place of rain, with considerable accumulations of mud toward evening of both days and after sundown.

The stone pavement was exchanged for macadam, with strips of stone along the car tracks, from 161st Street, where the route turned down Kingsbridge Road, now commonly called Broadway, and nearly to the Ship Canal at Spuyten Duyvil.

A long down-grade beyond Dyckman Street is paved with smooth blocks, how-



AMERICAN STEAM TRUCK CARRYING 5-TON BLOCK OF STONE.

No. 6.—Steam stake truck, designed by Arthur Herschmann and built by Columbia Engineering Works, Brooklyn, N. Y. Driven by 35 to 40-H.P. steam engine; burns anthracite. Weighed 14,500 lbs. without load, carried 10,000 lb. block of stone in trials, with load capacity of 12,000 lbs. Load bed of body measures 12 ft. by 6 ft, 10 ins. Maximum speed 12 miles per hour. Wood wheels and solid rubber tires.

delivery wagons made the good showing which could be expected of types which have been in the market for a couple of

early. Passing from 59th Street to Central Park West, and thence west on 110th Street, the sharp grade rising to the turn at Am-

ever, as even as a parlor floor, and the temptation to run fast down this incline under the brakes caused the undoing of the

The short 230th Street was the scene of many troubles. Its macadam was full of holes; it was crossed by two railroad tracks

steam trucks, but was stalled within a few feet from the top, and while it was extricated from its trouble by unloading, the Coulthard ascended laboriously with its human load dismounted; the Morgan truck made its way rear end first, getting the benefit of a pull instead of a push and of a low reverse gear, and both made stops to gather steam. So did the little $4\frac{1}{2}$ horsepower Mobile wagon, while a number of ordinary gasoline pleasure automobiles flew past and up, as if to show how different and difficult was the proposition of hauling commercial loads.

No special obstacles to progress were encountered on the macadam of Bailey and Sedgwick Avenues, though the latter includes a long up grade of 3 to 5 per cent. At Fordham Road a turn is made onto dirt surface again, but all the way over Jerome, Seventh and Fifth Avenues back to the clubhouse, the surface conditions were easy, and the closer traffic proved no serious drawback.

The second stage through the most congested streets of New York was well designed to try out the skill of operators. The long, gentle up grade from the Plaza to 40th Street was the easiest stretch to negotiate except for those competitors who happened to follow close after a sprinkling cart in the late afternoon. These found the usual difficulties from slewing wheels when applying the brake a little off the crown of the road, or when driving up after a compulsory crawl in the jam of lighter vehicles. The stops made necessary by the traffic were numerous, especially at the crossing of



LIGHT DELIVERY WAGON THAT MADE SECOND-BEST TIME.

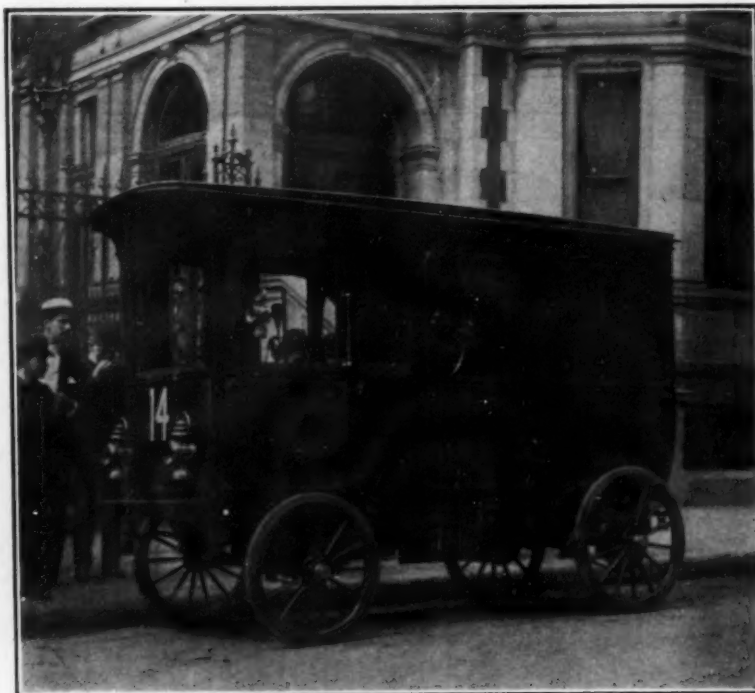
No. 12.—Gasoline top delivery wagon. Built by Knox Automobile Co., Springfield, Mass. Driven by single cylinder air-cooled gasoline motor of 8 H.P. Weighed 2,070 lbs. without load and carried 1,245 lbs. pig lead in trials. Wood wheels fitted with Continental pneumatic tires. Maximum speed about 20 miles.

Union Motor Truck Company's "baggage express," whose rear right tire was buckled off at 195th Street half-way down this inviting hill, under the opposite strains of 8,000 pounds pulling the tire around in one direction and the brake blocks holding it back in the other.

The solid tire was secured to the felly without transverse bolts, being squeezed between a wooden strip, bolted to the felly on the middle portion of its circumference, and iron flanges on both sides, the latter being bolted one to the other transversely through the felly. This construction is not one commonly used, but has been devised by a firm which has no connection with the automobile tire trade. Observation after the accident, by which the truck was upset completely on the car tracks with bent fore axle and right rear wheel badly dished, did not disclose with certainty, however, whether the tire caused the spill by coming off when the car was running straight down the hill, or the driver attempted to moderate his speed by swerving and lost control, swinging about at a right angle with his previous direction, thereby bringing an enormous side pressure to bear on the tire and wrenching it off, at the same time as the car toppled over by its momentum.

From the Ship Canal a short stretch of dirt road, quite soft and uneven led past the official water and gasoline station to the turn at 230th Street, over a bridge which proved somewhat too weak for the big Coulthard truck, a board giving way while the driving wheels passed over it. No damage resulted, and the place seemed to have been repaired the next day.

with numerous trains passing, and immediately beyond the tracks it rises in a short, steep grade, perhaps 8 to 10 per cent. incline, very deceptive to the eye. On the second day the Union gasoline stake truck



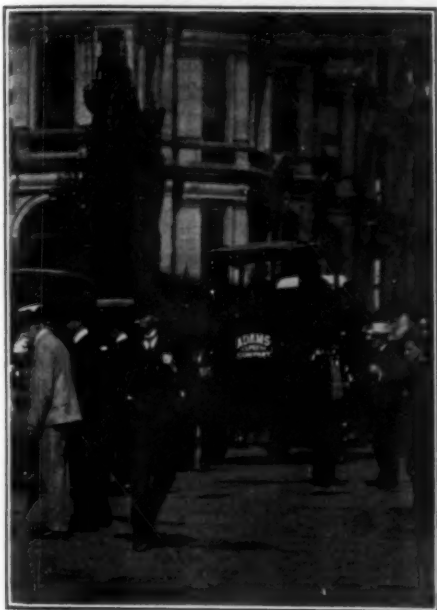
VESTIBULE FRONT STEAM DELIVERY WAGON.

No. 14.—Ten horsepower steam delivery wagon made by Blaisdell & Co. of Brooklyn. Weight 3,530 lbs., load 1,720 lbs. of nails in kegs and oats in bags. Retired after first dry on account of broken pump and fuel leak.

led the procession of heavyweights over this grade, having arrived in advance of all the

42nd Street, where the new British police system of crossing in bunches with inter-

vals of rest brings all vehicles to a full stop, whether necessary or not. From 40th Street down the famous grade past the Waldorf-Astoria Hotel more than one heavy truck was seen sliding sideways over the wet asphalt when going down, and with driving wheels spinning around for a hold coming up. And this condition was worst, not where the grade was steepest, but immediately below the steep places where grease



HERSCHMANN STEAM EXPRESS TRUCK.

No. 7.—Steam truck, designed by Arthur Herschmann and built by the Columbia Engineering Co., of Brooklyn, N. Y. Driven by 15-H.P. engine, uses anthracite coal for fuel. Entered by Adams Express Co. Carried 4,000 lbs. in trials but has capacity for 5,000 lbs. Weighed 10,225 lbs. empty, with fuel and water on. Wood wheels fitted with Hartford solid tires of square section. Maximum speed 15 miles.

and water gathered a certain sticky and slippery consistency in the busy hours, when the street cleaners get only scant chances for applying their squeegees. The cobblestone pavement on Broadway from the Flat-iron building down to Canal Street gave a better foothold, or rather tirehold, and the superiority of automobile trucks over heavy horse-drawn vehicles in winding in and out of the traffic was here plainly demonstrated. The time for the whole second stage averaged little over one hour for the lighter cars in the contest and little over two hours for the heavy ones, barring the cases when other than traffic troubles were encountered. Nothing more convincing in regard to the manageability of the heaviest motor trucks could be imagined than the passage through West Street, where the cobblestone pavement is exceedingly rough and the jam of business wagons of all descriptions blocks the way of progress at every other step. Going round Battery Place and again ascending on Broadway similar conditions were met and overcome at the Fulton and Vesey Street crossings, but seemed trivial after the previous experience.

French View of Commercial Vehicles.

Cabs, Omnibuses and Freight Wagons Have Proven Faster and More Regular than Horse Vehicles—Prime Cost and Upkeep Will be Reduced by Simplification.

Staff Correspondence.

PARIS, May 13.—The thing which must have the greatest influence upon the development of automobilism in the future is the question of cost. It is easy enough to leave this in the background at a time when makers are turning out high class vehicles for customers who do not mind what they pay, or are in the habit of getting their pleasure for nothing by selling cars at a profit and buying others, but it is clear that this sort of thing cannot last indefinitely. With the admission of so many new firms into their ranks manufacturers are obliged to give more and more attention to the average customer who wants to know what the automobile is going to cost him, and when he is assured as to its economy business will undergo an expansion that will continue by leaps and bounds until mechanical traction becomes general.

TRANSPORT CONCERNS INTERESTED.

This matter interests the great transport concerns no less than the small users. For many years they have been carrying out experiments with vehicles of all types in order to judge of their reliability, and the results now obtained are so satis-

factory that no one has ever the slightest word to say against the running of the vehicles. They have been tried as cabs and omnibuses and freight wagons, and in all cases they have proven faster and more regular than the horse vehicles. Only one thing stands in the way of their general adoption, and that is the first cost and upkeep. The transport companies have, of course, to look not only after the comfort and convenience of the public, but also after their own profits, and though the two things are almost synonymous it is clear that if the companies pay too highly for speed and convenience they are likely to find a diminution in the returns.

PRICE OF COMMERCIAL VEHICLES.

As the price of a mechanical omnibus or wagon is considerably more than an ordinary vehicle with horses the user thinks that it is only to his advantage to employ it when he can be assured that the working expenses are much less. It has to be placed in the hands of skilled men who are paid a fairly high rate of wage; the rubber tires need renewal, and then the mechanism has to be carefully



ENGLISH COKE BURNING LORRY—THE ONLY FOREIGNER COMPETING.

No. 1.—English lorry made by Coulthard & Co., of London and entered by the John Simmons Co., of New York. Driven by 20-horsepower steam engine and using coke as fuel. Weighed 14,225 lbs. with water tank and fuel box full. Carried 10,000 lb. load in trial, has capacity of 14,000 lbs. Bed of load portion measures 13 ft. 8 in. by 6 ft. Has two forward speeds and reverse, with maximum speed, loaded, of 6 to 7 miles. Wood wheels, fitted with flat steel tires in front and metal tires on drive wheels made in segments and with longitudinal slots filled with soft metal composition, all bolted through the felly on composition filling.



GASOLINE STAKE TRUCK—DAMAGED BY CARELESS HANDLING.

No. 2.—Gasoline stake truck made by Union Motor Truck Co. of Philadelphia. Driven by 20-H.P. four cylinder motor with roller clutch drive gear of novel design. Weighed empty 5,810 lbs. and carried 3,240 lbs. of horse feed in sacks in trials. Wood wheels and solid rubber tires. All mechanism mounted rigidly on iron under-frame. Block brakes acting directly on rear tires and emergency brake on differential gear.

looked after and occasionally repaired. It is useless to burke this question, because it is the rock upon which so many public services have split, and the transport companies themselves are well aware that for the moment, at any rate, there is a minimum of expense which is often above the maximum of horse-drawn vehicles.

PRIME COST WILL BE REDUCED.

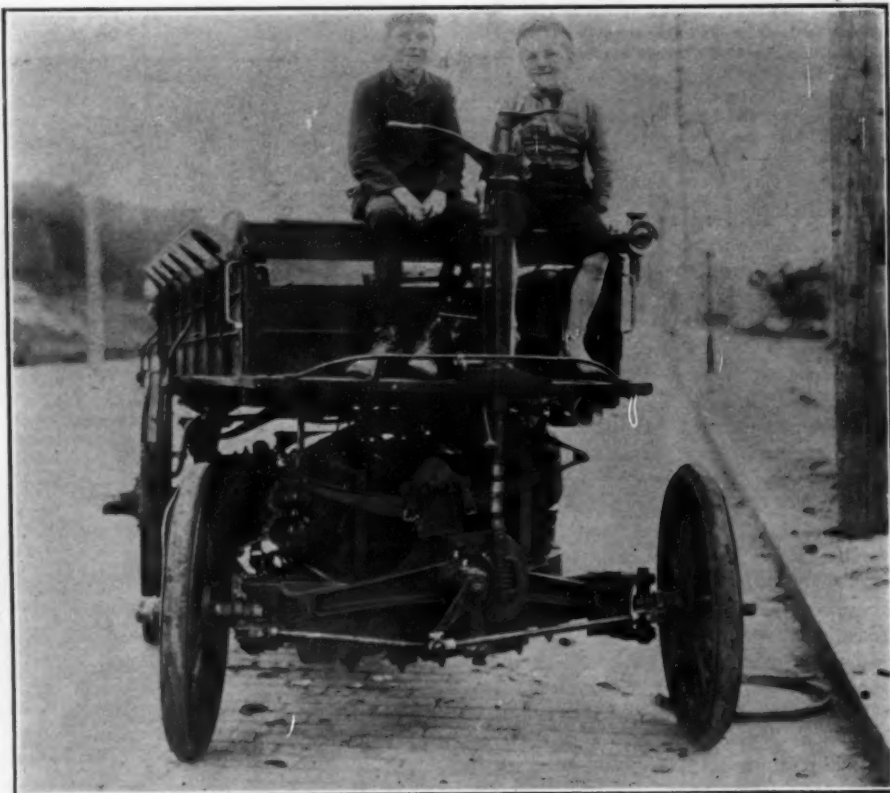
The time will certainly come when the perfection of the industrial car will remove this objection on the score of cost. It will be of much simpler construction, and guided by experience in the requirements of users it will be more adapted to the different services. The omnibus, cab and wagon of the future will require no more attention than the ordinary vehicle. Its cost also will be considerably reduced until the sole drawback to its employment in public services of all kinds will be removed. I am speaking, of course, of the matter from a general point of view, and not in the light of special services that cannot be satisfactorily performed by horse vehicles, such as the rapid collection and distribution of mails, transport over mountain roads or in countries like northern and central Africa where horses are unable to stand the climate. Meanwhile much can be done to allow of the automobile competing with the horse, on the score of economy, by reducing the consumption of fuel, and this is being done to such a remarkable extent that by the time the first cost and general upkeep have been brought down to something like the cost of an ordinary

vehicle the total expenses will be so low that the horse will no longer be able to compete with the automobile.

SMALL FUEL CONSUMPTION.

The most encouraging sign of an economy, which is to do so much for the development of the automobile industry is the result of the different consumption tests that are held every year in Paris. Ever since the tests were inaugurated there has been a steady diminution in the consumption of gasoline motors. Up to last year it was generally supposed that a consumption of .07 liter per kilometer ton was the limit to which it could be brought, but when Chenard et Walcker for the first time got down to .055 liter, a fresh interest was given to the economy of motors, for it was clear that a great deal could yet be done in the way of reducing the consumption of fuel. How far this hope was justified was proven by the results of the recent consumption trials organized by the journal *L'Auto*, which it is well to here recall.

In the general classification by the kilometer ton, the advantage is necessarily with the freight wagons on account of the high ratio of load to tare, and for the same reason the big touring cars are at a disadvantage. In the trials the freight wagons consequently came out with the lowest consumption per kilometer ton, the Peugeot with a load of 4 1-2 tons getting the remarkably low result of .0489 liter, while the Bardon wagon, with a load of 2 1-3 tons, followed closely with .496 liter. The lowest consumption for pleasure vehicles was obtained by a



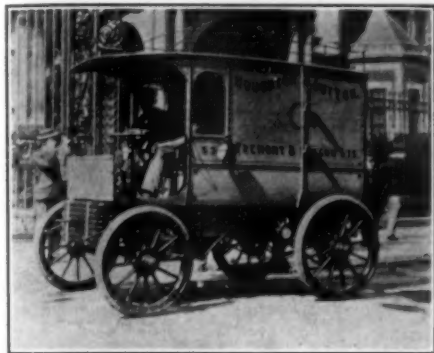
DAMAGED TRUCK THAT UPSET ON SECOND DAY.

No. 3.—Union gasoline baggage express that upset on Broadway Boulevard near 190th St. when tire came off rear wheel. Righted by street railway wrecking wagon. Front axle mechanism displaced and bent, front wheel rim bent, spring sprung, rear wheel dished till it touches body and spokes broken.

Peugeot light carriage, which gave a result of .0526 liter.

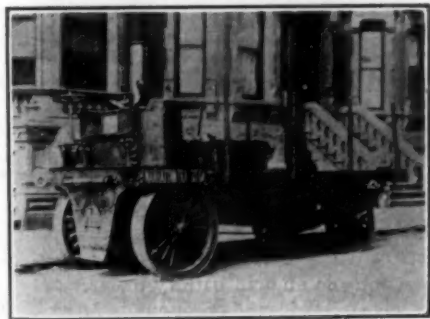
An interesting feature is the comparison between the two Peugeot light carriages, using gasoline and carbureted alcohol, the consumption of the one being .0526 liter and of the other .0535 liter, so that the consumption of the alcohol was only a shade above that of gasoline.

It will be seen that the results of the tests are in every way excellent. They



BOSTON GASOLINE DELIVERY WAGON NOT IN CONTEST.

show that with the improvements in motors and transmissions the consumption is as low as can be reasonably expected, and in this respect the automo-



HEAVY STEAM TRUCK NOT ENTERED.

bile is far more economical than the horse. It now only remains to reduce the general upkeep in like proportion, a result which will certainly be attained before very long.

The President of the Argentine Republic has ordered two light American gasoline runabouts for his personal use.

Automobile fire engines, hook and ladder trucks and an automobile water tower are to be features of a parade of firemen to be held in New York on May 28.

A steamer of 3,600 tons has been chartered to carry the Gordon Bennett racing cars of the French team and the touring cars to be used by the French visitors at the Irish Fortnight. The steamer will leave Havre on June 27 to arrive at Dublin the following day, and it will be used as the French headquarters during the two weeks of events.

The Conversion of Homer Davenport— Cartoonist and Horseman.

BY JAMES MONTAGUE.*

"Did you ever ride in an automobile—I mean a real one, not a horseless hack?" inquired Homer Davenport, horseman and cartoonist, yesterday, as he came into the office with a dark-brown look on his face and a look of lingering longing in his eyes.

Being neither a cartoonist nor a horseman, I replied that I never had.

"Well, you don't know, that's all," he continued. "You think you've lived, but you haven't. I never did till to-day.

"You know where I am concerning the horse—brought up on one—only cradle I ever had was a saddle—rode from Silverton to Salem before I could walk—well, I'm afraid it's all off."

The cartoonist sighed, and again the far-away longing shone in his eyes.

"As I said before, I had only a passing acquaintance with automobiles until this morning.

"Last night a friend of mine in East Orange said he wanted me to go out to my farm at Morris Plains with him. I said all right, we'd catch the 8.13 train and get back to town in time to go to work.

"Train nothing," he said, 'we'll go out in my automobile.'

"But there isn't time for that," I told him, 'we haven't got all day.'

"He looked at me as if he thought I still belonged to Silverton.

"Don't you ever read the papers or anything?" he asked. 'Where have you been for the last ten years?'

"All right," said I; 'if we can do it in time I withdraw my objections. Be at my house at six o'clock.'

"I harnessed up little Homer in the morning, and we were at the post about the time the roosters were telling each other the morning news. Pretty soon a sound like a runaway sewing machine came around the corner and a little way behind it an automobile—not one of those big battle ships, but a little 5 horse power concern that looked like a general store delivery wagon, and had a whiff of cigar smoke hanging on behind.

"We got in, and the man put his foot on something and his hand on something else, and szzzzzzt! we shot out of that town like a long black streak.

"Did you ever get into an elevator the first time and think you had left your stomach and most of the middle of you

*This humorous sketch which originally appeared in the pages of the *New York Journal* so well describes the sensations of the novice, in taking his first automobile ride, that we reproduce it for the benefit of those who would otherwise be unable to enjoy the laugh that its perusal must inevitably produce. Mr. Davenport is one of the best known newspaper cartoonists in America and is passionately fond of horses.—Ed.

behind when you began to go down? That's it. That's the way you feel.

"I hung on to the seat and began to hope, and little Homer hung on me, and I thought I heard him repeating all the prayers his mother ever taught him.

"Is anything the matter?" I asked the man, thinking perhaps he'd got her hooked down too far, or some of the notches had been scraped off the throttle guide.

"Oh, no," he said, 'only I don't want to run too fast through town. I'll let her out as soon as we get on the pike.'

"After that I stopped asking questions, and just settled down to the work of holding on and watching the scenery go by.

"I don't want to fly. I wouldn't take the best air ship in Santos Dumont's aviary. All the required sense of risk and all the joy of flying is to be had right on the seat of a dinky 5 horse power automobile. Your point of view is changed. You see horses rear up when you pass them, and think it is funny. It's about the limit when you do that, for if you've ever driven a nervous horse past an automobile you thank heaven that you were never the kind of a fiend who could skate one of those red terrors over the earth.

"Pretty soon a little ki-yi-ing cur—the kind that yaps at a horse's heels and inaugurates runaways—came out and settled down steady ahead of us, so as to be somewhere near our pace when we passed. The man just reached out with his cane when we caught up, and zip! the dog went through the air like a golf ball. We heard one far distant yip when he lighted, and began to wonder what had happened, and then swish! we were over the next hill.

"This scenery along here is all right," I said finally, 'but it's too much like a cinematograph to be convincing. I wish we were over in the next valley, where we could see the mountains. They'd be farther away and give us a better chance to count the houses as we went along. But it's a long way over there.'

"Oh, I don't know," said the man, giving his lever a little yank when we came to the next crossroad. The delivery wagon just went up on two wheels and stayed there till we got around the curve, while I leaned out as far as I could, and held little Homer the rest of the way so as to balance her down. And almost before I had time to think about where we were, we were scooting along under the mountains, and winking as the houses went by, flick, flick, flick, like the streaks of light in the Park Avenue tunnel when you're going out behind time and there's only two or three other trains on the track ahead of you.'

"But," I interposed, while the cartoonist leaned on my desk to get breath, "didn't you, as a sober, steady horseman, feel ashamed of the way you were tearing up the earth and farmers' teams, and scarifying Reeve's pheasants, and leaving a trail of attar of gasoline behind you?"

"Ashamed? Not for a minute. You're in another atmosphere when you get into one of those things. You're not on the earth at all, nor any part of it. You wouldn't care if you scared Cresceus so he couldn't trot a mile in eight minutes; and as for farm horses—well, of course, I'm a farmer, and have looked upon automobiles as a curse and an abomination, but I never was in one before, don't forget that."

"We got out to the farm and had breakfast and breath. Then we looked at a few pheasants and back the same way. When I got to East Orange I saw a lot of people getting on the train to go to New York and felt sorry for them. A man certainly does lose an awful lot of valuable time traveling on a railroad."

"Haven't gone back on horses, have you—such a confirmed worshiper of the Arab Barb, the Barb Arab, and the Barb Wire as you are?"

"N-no. Oh, no, I haven't got back on horses at all. But let me tell you something. I'm going to get another horse before long, and when I do get it it will be an automobile."

Good Roads Measures in Michigan.

A joint resolution for the submission to the people of Michigan of a constitutional amendment giving the State authority to appropriate money for the improvement of wagon roads under a State aid plan similar to the laws in force in New York, New Jersey and Massachusetts has been passed without debate by the House Committee of the Whole. The amendment, if passed by the Senate, will be submitted to the people at the general election in 1904.

The House committee also passed a bill introduced by Representative Austin giving townships authority to issue bonds for highway improvement. As passed after amendment, this act provides that upon petition of twenty-five freeholders of a township, the township board shall submit a proposition to the electors to bond the town for not to exceed 5 per cent. of the assessed valuation for the improvement, and that an affirmative vote by two-thirds of the electors voting shall carry the proposition.

Not Competent Testimony.

"Yes, Judge, that there durned orter-mobile jest kep' a comin' in spite of ever'thing I could do."

"What did you do immediately after your horses ran away?"

"There you've got me, Judge; I was too durned busy tryin' to come to at the side o' the road."

Storage Battery Principles.

I—Chemistry of the Cell.

BY HERBERT L. TOWLE.

The principle underlying all galvanic batteries, both primary and secondary, may be said to be that of electro-chemical reactions, on the one hand, as distinguished from ordinary chemical or thermo-chemical reactions on the other.

That is to say, the majority of metals and unstable metallic compounds are attacked by acids with the evolution of heat, the metal displacing the hydrogen in the acid and forming a salt thereby, while the hydrogen released from the acid, unless taken up by some other chemical in the immediate vicinity, escapes freely in bubbles of gas. Of such a sort is the dissolving of iron in sulphuric, nitric, hydrochloric and many other acids; the solution of copper and silver in nitric acid; of lead in nitric or acetic acid, and of gold in "aqua regia," or equal parts of nitric and hydrochloric acids. Not all acids will attack any given metal, and different acids vary greatly in their affinity for different metals. Again, if a given metal be introduced into a solution of a salt formed by the action, on another metal, of an acid whose affinity for the first metal is stronger than its affinity for the second, the acid element or radical of the salt will leave the second metal and unite with the first, depositing the second metal in a thin film on the surface of the first. A familiar example is the coppering of iron by dipping it in a solution of copper sulphate ("blue vitriol").

ELECTRO-CHEMICAL REACTIONS.

In electro-chemical reactions, on the other hand, the metal, if pure, is normally unaffected by the acid, which nevertheless has a certain affinity for it. The tendency of the two to react is made effective by introducing into the acid some solid conducting body for which the acid has less affinity than it has for the first metal, and establishing electrical connection between the two. This connection may take the form of an external wire connecting the two, or of simple contact in the acid itself. In either case, an electric current will flow from the metal attacked, through the solution to the inert body, and back by way of the electrical connection. Thus the reaction of the metal and acid, instead of producing heat as in the cases first considered, liberates electrical energy.

THE ATTACKING SOLUTION.

The attacking solution need not necessarily be an acid. As in thermo-chemistry, it may be a relatively unstable salt, and instead of a metal, metallic oxide may be employed. Of these various phenomena, commercial examples may be found in the common Leclanché battery

with zinc, sal-ammoniac solution and carbon; the Daniell or gravity battery, with zinc, sulphuric acid and copper sulphate solution, and copper; and the bichromate battery, with zinc, sulphuric acid and carbon, plus bichromate of potash for the purpose of absorbing the hydrogen liberated on the carbon.

PRIMARY BATTERIES DISCUSSED.

Thus far only primary batteries, as constituting the simpler branch of the subject, have been considered. Now, if any of these primary batteries be taken when exhausted, and an electric current be forced through it in the contrary direction, the chemical changes wrought, or some of them, will be exactly reverse of those which occurred when the battery was discharging. The active metal (zinc, for instance) will be re-deposited from its salt; and the acid radical remaining will take up hydrogen from the water to form the original acid, liberating oxygen at the inactive or so-called positive electrode.

This oxygen may re-combine with the depolarizing or hydrogen-absorbing agent at that electrode, forming water and the original depolarizer again, or it may escape as free gas, depending on the nature of the depolarizer. To a greater or less extent, therefore, every galvanic battery is theoretically reversible. Practically all batteries of the classes that have been described are unsuited for such service, partly because the active element most used—zinc—though not rapidly soluble on open circuit when pure or amalgamated with mercury, is too much so to last long in an acid battery in intermittent service. Again, the compounds formed on charge and discharge are many of them soluble in the solution, and this results in great changes in physical structure every time the battery is reversed. For a practical working storage battery, it is essential that the electrodes and all the metallic compounds formed during charge or discharge shall be insoluble in the electrolyte, since only thus can we insure a minimum of change in structure from one charge to the next. That condition is fulfilled in the lead storage cell, and in no other of those using acid or saline electrolytes. This, though the fact is seldom appreciated among laymen, is the real reason why most of the attempts to displace the lead cell by something lighter and more efficient have been so signally unsuccessful. To the lead storage cell, therefore, our attention will be confined.

THE LEAD STORAGE CELL.

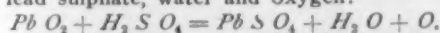
If we examine the plates of an ordinary lead cell when it is charged, we will find the positives—those of which the current leaves the cell on discharge—to be cov-

ered with a porous reddish brown substance, which is principally peroxide of lead. PbO_2 . They are electrically connected by solid lead bars, and are carefully insulated from the negatives, whose grayish surface is pure lead, deposited in a spongy state. The electrolyte of such a charged cell is a solution of sulphuric acid (H_2SO_4) in water, of about 1.25 specific gravity. On discharging the cell, a portion of the peroxide, about 30 per cent., together with a somewhat larger proportion of the spongy lead of the negatives, becomes converted into lead sulphate; the active material on the two sets of plates, in fact, tending toward a similar composition. The acid, meanwhile, has played a part in the reactions, giving up its sulphion (SO_4) to both plates, while its released hydrogen combines with the released oxygen from the peroxide to form water. Consequently the solution is considerably weaker than when discharge began.

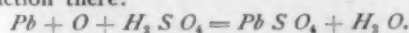
It is very difficult for the chemist to follow the reactions of the lead cell on charge and discharge on account of the very fact that gives this cell its commercial value—the insolubility of all the lead compounds formed. Fortunately, an exact knowledge of these reactions is not necessary to enable one to care for his battery successfully, but for those who wish to understand the hidden workings of the cell, the most generally accepted theory of these reactions, as stated by Treadwell ("The Storage Battery"), may to advantage be given here.

THEORY OF REACTIONS.

On the positive plate, one molecule of acid unites with one of peroxide, forming lead sulphate, water and oxygen:



The surplus atom of oxygen is supposed to be transferred to the negative plate, where it joins the lead and acid in the reaction there:



Thus two molecules of acid and one each of lead and lead peroxide disappear, and in their stead are found two molecules of lead sulphate and two of water. As this process goes on both plates become covered with sulphate and the acid partly disappears. There is no further basis for chemical reaction, and the current gradually ceases. As has above been indicated, the point of exhaustion or "complete discharge" is reached much before the whole coating of peroxide on the positives has been converted into sulphate. There are two reasons for this. In the first place, the porosity of the "active material" is limited, and as discharge proceeds the fresh acid from the main body of the solution, which has continually replaced that consumed in the reaction at the surface of the plates, has to penetrate deeper and deeper to find fresh peroxide. Again, the conductivity of the sulphate is poorer than that of the lead and peroxide which it replaces. Practically it is never

advisable to discharge the cell even to the limited extent actually possible, as this involves more or less risk of damage to the physical structure of the plates. There is a point in the discharge where the voltage begins to fall off very rapidly, and this voltage—about 1.8—is the accepted signal to cease the discharge.

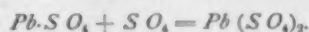
ENERGY SPENT IN CHARGING.

If the process on recharging were exactly the reverse of the above, the energy expended in charging would exactly equal that obtainable on discharge. As a matter of fact, even under the most favorable conditions, from 17 to 25 per cent. more energy is spent in charging than is available on discharge, and this indicates a difference in the reaction. What is supposed to happen is the formation toward the end of the charge, of persulphuric acid, $H_2(SO_4)_2$, a compound possessing the infrequent property of absorbing energy on its formation, and which, being very unstable, immediately breaks up, liberating its stored energy as heat.

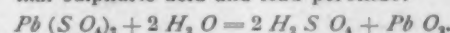
Taking the reactions of charging in detail, the acid, H_2SO_4 , is supposed to be broken up under the action of the current, hydrogen being set free at the negative electrode and sulphion (SO_4) at the positive. The hydrogen reacts with the lead sulphate, forming pure lead and sulphuric acid:



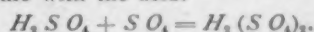
The sulphion, at the beginning of the charge, when there is a large quantity of sulphate on the positive plates, is supposed to react for the most part directly with the sulphate, forming persulphate of lead:



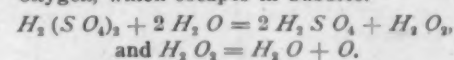
This reacts with the water, forming normal sulphuric acid and lead peroxide:



As the charging proceeds, more and more of the lead sulphate passes into peroxide, and under these conditions a part of the free sulphion is supposed to combine with the acid:



The persulphuric acid thus formed reacts with the water, forming sulphuric acid and hydrogen peroxide, which latter then breaks up into water and free oxygen, which escapes in bubbles.



As these latter reactions do not involve the electrodes, the energy spent in them is evidently wasted, and as they represent, together with the liberation of free hydrogen at the negative electrodes, the entire consumption of energy after the plates are fully charged, this theory explains why the last stage of a charge yields less results than the first. As the decomposition of persulphuric acid liberates heat, it explains also why the temperature of the cells rises noticeably toward the end of the charge.

With this necessarily brief view of the chemical theory of the storage battery, we are in a position to examine its practical applications, and in particular the numerous devices employed to reduce the weight and prolong the life of the plates. This, however, will have to be taken up in subsequent articles.

The Long Island Parade.

Despite the finest of weather, the automobile parade held last Saturday afternoon by the Long Island Automobile Club in Brooklyn, was disappointing both in the small number of participants and in the little public attention it attracted. Twenty-five entries had been received by the committee, and many other club members and unattached automobilists were expected to fall into line without the formality of making previous entry, which was not required, but when the machines moved off at about 3:30 o'clock there were only thirteen machines in line. Little attempt had been made to decorate the cars, except in three or four cases, in which flags and bunting of patriotic colors were employed. Only one machine was decorated with flowers, and the club prize for the most handsomely decorated car was awarded to the owner, Lawrence Abraham. The decorations were red roses and carnations and red and white ribbons. The machine was occupied by Lawrence Abraham, Dr. Frank Sanber, Clinton Brower, Percy Fairchild and Louis Eikwort.

Another attractively decorated machine was J. D. M. Schultz's Winton touring tonneau car, but no flowets were used in the decorations. Frank G. Webb's Locomobile was decorated with dark bunting effectively draped.

A feature of the event that attracted most attention was a big bull dog dressed with a hat and carried in Reed Holliday's Winton touring car.

The procession of vehicles was led through Prospect Park, over Ocean Parkway and through a number of the well-paved avenues of the City of Churches, by two special policemen mounted on bicycles.

The parade committee consisted of F. G. Webb, R. Holliday and F. P. Stephenson, and the judges were L. R. Adams, A. R. Pardington and W. W. Melvin.

The small amount of interest taken in the Brooklyn parade and the abandonment of the proposed automobile parade in Manhattan by the Automobile Club of America and the New York Automobile Dealers' Association this spring, seem to confirm the rather general opinion that parades are a bit passé and do not appeal to the automobilist, at least in large cities. They lack the spice of speed and of riding through interesting and beautiful country, and as a rule metropolitan inhabitants find more enjoyable ways of using their time and machines.

Automobiles in Peaceful Pursuits and On the Field of Battle.

Experimental Armored Auto for New York Regiment.

The motor car in military service has hitherto been used chiefly for transporting men and commissariat supplies and munitions of war. For offensive operations it has not as yet taken a great place in the matériel of any army. At the late automobile show in Paris, a suggestion for an armored car was exhibited by Charron, Girardot & Voigt. In this car the usual tonneau was replaced by a circular steel body over the top of which a rapid fire gun was trained, the artillerist being protected by a gun shield of the usual type. In the C., G. & V. car, however, there was no protection whatever for the occupants of the front divided seat or for the mechanism under the bonnet. In fact, the car was simply a suggestion.

This is exactly what the car shown in the accompanying reproduction of photographs is intended to be. At the recent military tournament in Madison Square Garden, New York, the car was shown in sham battle. Captain Edward W. Dayton, of Company G, Twenty-second (Engineer) Regiment of the National Guard

ard type electric trucks, in which the ordinary stake sides are replaced with adjustable walls of timber protecting the front and sides. The sides are two-ply, consisting of an outer armor, hinged at the lower ends and held vertically, when the



ARMORED AUTO ON THE MARCH.

truck is out of action, by lashings to the standing sides. From the inside of the truck, this outer sheeting can be let down to make a sloping armor, protecting not only the wheels and propelling mechanism

floor the space between the car body and the sides when these are extended fan shape. On this inner flooring the upper row of sharpshooters stand. There are in all sixteen riflemen in position when the car is in action, covering a wide arc of fire.

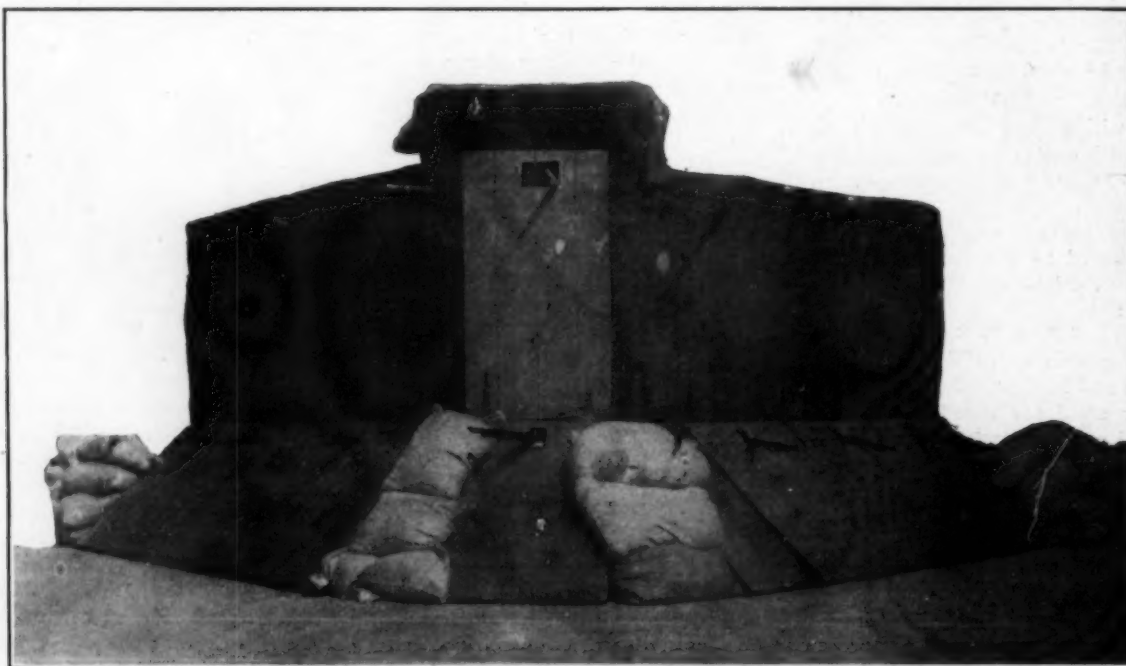
As seen in the larger engraving, the spaces between the sides and front sloping armor are filled with sand bags.

Like all other things mechanical, the armored automobile has its limitations. If the opposing force was equipped with field guns firing solid shot or explosive shell, it would be of little value, but there are many situations in which this objection would not apply. In street fighting or riots the car would be capable of deadly execution, and in fact, one such armored auto would effectually block a city street.

Captain E. W. Dayton contemplates the construction of a more practical type of car than this experimental one, in which the motive power would be steam and the protection will consist of bullet-proof armor.

The Automobile in Wireless Telegraphy.

Every few days brings out some new adaptation of the motor vehicle. But the machine shown in the accompanying illustration exemplifies the progressiveness of the present epoch in an almost startling



EXPERIMENTAL ARMORED AUTO IN POSITION TO PROTECT SOLDIERS DIGGING TRENCH.

of New York State, is responsible for the transformation of an ordinary vehicle of commerce into a formidable engine of war; this is not in construction but design. In place of the light armor plate that would be required in the vehicle when prepared to do battle, wood has been used in this experimental vehicle. It is one of the stand-

under the body, but giving shelter for riflemen, who fire through the loop-holes, and for about thirty men to dig trenches on the line occupied by the armored car. The standing sides of the car are moved outwardly from the rear when the outside armor is lowered, and shelves, which are fitted on the inside, are let down so as to

way. It shows how the twentieth century means of road transportation, using electricity as a motive force, has been employed in connection with the very latest development in communication over long distances without the use of wires. It shows, in short, a wireless telegraph outfit built upon an electric automobile.

Four of these auto outfits have been built for and are in use by the American DeForest Wireless Telegraphy Co., of New York. They are used as demonstration wagons for the purpose of showing how messages can be transmitted through the air. Wagon No. 1 was recently sent to Chicago and from there to Toronto, while No. 2 has been making demonstrations lately in eastern New Jersey. Nos. 3 and 4 have not yet been completely equipped with the telegraph outfits. As the outfits are small, the longest distance they will transmit is ten miles over water where there are no intervening buildings or other obstructions to the free passage of the waves. Ordinary they are used over much shorter distances.

One of the uses to which they have been put experimentally is to send stock quotations into business offices in the downtown district, small poles and receivers being set up in a number of offices and the quotations being sent from the wagon at some central point. The

ity of the new wireless system for military purposes.

The vehicle and special body were constructed by the Woods Electric Vehicle

and a 400-pound electrical transformer for changing the nature of the current to suit it to the requirements of the instruments. Within the cubic glass operator's case



TOP OF WAGON SHOWING WELL FOR OPERATOR AND INSTRUMENTS.

Co. The wagon is driven by two electric motors using current from a Porter storage battery. The long, deep after body portion contains not only the battery for

surmounting the body proper are a small generator, a transmitting key and a box containing Leyden jars. One of the rear glass sides of this box is hinged so that the operator can enter, and a circular hole is cut through the floor of the box into the body proper, making room for the legs and body of the operator as he sits at the instrument.

Huge Lawn Mower Driven by Gasoline Engine.

Special Correspondence.

WASHINGTON, D. C., May 21.—Surrounding the United States Capitol Building are several hundred acres of ground, and heretofore the mowing of this immense lawn was considerable of a problem, many men with hand mowers being annually engaged in the work. From April to October they were kept busy with hand mowers, scythes and sickles, and there was no time when the entire grounds were clothed with an even coat of grass. All this has been changed with the advent of an automobile lawn mower, credit for the obtainment of which must be given to Elliot Woods, the superintendent of the Capitol Building. The machine was manufactured by the Coldwell Lawn Mower Co., of Newburg, N. J., and has attracted a great deal of attention since it was first put into operation.

The machine, which is operated by steam, is of compact construction and weighs 3,000 pounds. In general appearance it resembles a small asphalt roller, so familiar to city residents, except that all the metal work above the running gear is copper and brass. The machine has an 18-inch tubular boiler built to stand a maximum pressure of 150 pounds. The water tank, which has a capacity of 50 gallons, is located under the seat, while the gasoline tank, capable of holding 20 gallons of fuel, is under the foot rest. The driving is by 3-4-inch chain. Both the water and gasoline pumps are automatic. The machine can be worked in



AUTOMOBILE FOR DEMONSTRATING WIRELESS TELEGRAPHY OUTFIT.

wagons have also been used for demonstration work in the field at army posts, for the purpose of proving the practicabil-

driving the wagon, but also a twelve-cell battery for driving the generator to furnish the current for the telegraph outfit.

any direction and responds readily to the hand of the driver. Change of direction is accomplished by a small roller that trails behind the revolving blades. It has been demonstrated that 16 gallons of fuel will suffice to drive the machine in a day's work of eight hours, and in that time several acres of lawn can be mowed by it. A feature of the machine that commends it to all is that it cuts more than twice as wide a path through the grass as the ordinary hand mower, and furthermore, it saves the turf from injury from the constant trampling of grass cutters. The

Informal Local Associations.

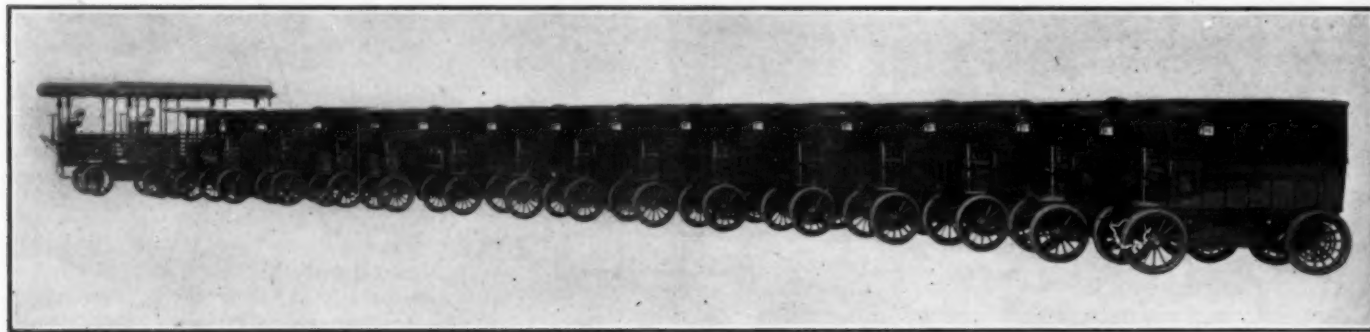
A Substitute for the Automobile Clubs of the Large Cities in the Small Cities and Towns and Rural Districts— Cultivation of Local Common Interests.

Special Correspondence.

ROME, N. Y., May 22.—Central and Western New York manufacture and use automobiles with equal intelligence and enthusiasm. Each of the best grade cities along the New York Central, from the

eral times said to me this winter, "as an outgrowth of the social life that is to center about the automobile in its further development."

Some such plan seems reasonable, and



ROW OF ELECTRIC DELIVERY WAGONS IN DAILY USE BY A NEW YORK DRY GOODS STORE.

rollers are also a help toward making a perfect lawn.

The machine has demonstrated itself to be a very efficient piece of mechanism, and when the operator becomes a little more familiar with it, will undoubtedly prove a decided success.

For Dry Goods Delivery.

We present herewith an illustration of fifteen new electrically-propelled business wagons and two electric trucks, which are in regular daily use for city delivery service by the firm of James A. Hearn & Son, proprietors of a large department store in New York city. As an instance of what has already been done toward "the emancipation of the horse," this photograph will appeal to every one who takes an interest in modern progress.

Road Improvement Held Up.

Improvement of the Plank Road connecting Jersey City with Newark across the Jersey Meadows, is being delayed by the objection of the Board of Freeholders of Essex County to the issuance of \$300,000 in bonds which the committee on bridges desires for the purpose of raising funds for the rebuilding of the bridges across the Hackensack and Passaic rivers. The joint committee on bridges of Essex and Hudson Counties has voted to purchase the necessary land to widen the road to sixty feet and pave it with granite blocks and trap rock. The trolley company will be asked to pay its proportionate share.

Hudson River to Lake Erie—Albany, Utica, Syracuse, Rochester and Buffalo—have their automobile and parts factories, their clubs and other rallying places for the sport and industry. In the rich intermediate and contiguous territory, the number of owners and users increases apace, and in the aggregate it is an important matter when you come to consider the long line of towns and cities on the map.

The whole summer through everything invites and things move in no uncertain way. The Mohawk, Saquoit, Oriskany and Genesee valleys, the foothills of the Adirondacks, the lake region from Auburn to Canandaigua, the Niagara Frontier—these and more are readily accessible, except for occasional bad roads, which are very slow to mend. A few toll-gates yet remain, but they are about to go. From May to November automobile enthusiasm shows itself in various forms. But in winter the sport all but sleeps outside of the first grade cities already named—and Rome, where the conspicuous activity of the C. G. V. factory keeps up a local interest more or less throughout the year.

NEED FOR LOCAL ASSOCIATIONS.

To some the idea of more new clubs in the smaller places has appealed, but the wiser heads upon the up-State automobilists know that a formal automobile organization is no easy matter to keep up outside of the leading centers. The need is rather for some different sort of local association, better suited to the semi-rural environment and less expensive to a smaller membership. "Something of the kind is bound to come," it has been sev-

when the time comes Central New York will be ready for it. We can plant a seed of interest almost anywhere in this section and find good soil for it. As a starting point let the congenial people who own automobiles, men and women alike, form an informal local association, first of all for mutual pleasure, next for the collection of various kinds of information concerning their own and nearby localities. Each circle should have at least a secretary to act also as corresponding secretary, who should be a man of sufficient knowledge to give any desired information to members or outsiders. If thought worth while reports covering recent additions to local knowledge might be issued.

A HEADQUARTERS NECESSARY.

The association should at least have rooms of its own, even if at the home of a member, and for that reason subject to change from time to time. It should at all events be open to local and visiting automobilists and be provided with a reading and writing table, telephone and other conveniences. Such an informal headquarters would quickly become a center of easy and spontaneous interest. Meetings might be called on occasion—upon due notice—and at such times a paper or two might be read, to be followed by discussion, without voting, unless it should seem desirable to pass on some question of interest to the society as a whole.

If the association is large enough and varied enough in its membership, it would be well if the papers read at the different meetings could be prepared by different divisions—each division pledged to make

the most of some particular form of effort. Thus at one meeting the subject might be historical, at another meeting the papers might describe the physical features of any region especially well known to the writers. Roads, with suggestions of practical measures for improvement, ought to have at least the third place, and for the fourth there might be readings and discussions of mechanical matters, with special reference to new things in the automobile line.

Such a work as this, carried out in the same spirit in which it is instituted, ought to provide now and then an interesting and versatile program. It would put a premium upon observation and inquiry, while encouraging practical enterprise.

GATHER ROAD INFORMATION.

The geographical division of the association would have some of its most important work. It would devolve upon this division to make reports on the conditions of the highways; to offer frequent and weighty suggestions to the highway commissioners and road engineers of the district. Its members could discover and correct errors respecting distances and the like, which the signboards put up by mercantile establishments so frequently make. It is, indeed, a definite and important field, multiplying the roads, information usually available in small cities and towns. Knowledge of

tory would come into the possession of facts out of which papers of original value could be written—meteorology, the study of the clouds, weather lore, the climate in different localities, and so on. Those particularly interested in automobile development would find plenty to engage their attention. Careful reading and discussion of the new things in the trade papers might serve as texts, with correspondence with manufacturers and occasional visits to factories, shows and well-equipped stores to round out the subject and sustain its interest.

NOT FOR METROPOLITAN MOTORISTS.

Your correspondent cannot say that these things will equally interest your metropolitan constituency. But for the small cities and towns, and for the country, some such substitute for the formal clubs seems called for. Rome, for instance, would draw from a dozen points not so readily accessible to Utica; likewise Cortland, Auburn, Ithaca, Geneva, Canandaigua, Batavia, Lockport and many other places between Utica and Buffalo. At once the number of places having regular automobile clubs is multiplied, and some definite interest is carried where it would not otherwise go. Such a dispensation would help along the time when the well-to-do of the country as well as of the town will go about on vehicles of their own, with convenient speed, without fatigue, but rather with refreshment of

NEW VEHICLES

New Light Road Car.

A new type of light road car is shown in the accompanying photograph taken with a man standing beside it so that a comparison of dimensions is readily possible. This car is styled the Alpha and is to be manufactured for the market by a New York company of which R. E. Jarrige is the promoter. The design contains suggestions of the Renault and Panhard cars in the general outlines. It is built very light and fitted with a single cylinder vertical motor under the square hood. Three speeds forward and reverse are used with control by two side levers and clutch pedal. The car is built with divided seat to carry two persons, and will be put on the market at a medium price.

The Clarkmobile Runabout.

A long body hung low on a reachless running gear having a long wheel-base of 72 inches, a wide, high-backed seat and a bonnet-like box in front are characteristics of the Clarkmobile recently placed on the market by the Clarkmobile Co., of Lansing, Mich., after an experimental car had been run successfully for two years. The power is furnished by a single cylinder four-cycle water cooled motor placed horizontally in the back end of the body. Every part of the cylinder is water jacketed, including the intake and exhaust valves and the spark plug. The carbureter is of special design, having only one light moving part and needing no change after once being properly adjusted. The same adjustment permits the car to be driven at five miles or thirty. The throttle is operated by foot from the floor of the car. The Upton transmission gear and Baldwin roller chain are used. The drive axle is fitted with Timken roller bearings, and Dunlop detachable tires are fitted to the artillery wood wheels. The springs are elliptic and very long, giving with the long wheel-base a very easy motion in riding.

A steering mechanism of novel construction is one of the individualities of this machine. It is a wheel and worm gear device, but quite different from others in use and very quick-acting, a three-quarter turn of the hand wheel serving to turn the wheels from straight ahead to hard over, and one and a half turns operating the lever through its full 90 degrees. The device is self-locking in any position, the worm wheel is adjustable for wear and the working parts are dust-proof and oil-tight.

By the removal of eight bolts the body can be removed from the angle steel frame, exposing all of the machinery. The motor is balanced to overcome vibration. The hood in front is reserved for the



AUTOMOBILE LAWN MOWER IN WASHINGTON, D. C.—See page 575.

local routes, maps of districts and the like are the currency of automobile information.

NATURAL HISTORY STUDY.

Meanwhile those fond of natural his-

body, quickening of mind and enlargement of knowledge and interest.

Dr. Minnie J. Lawrence, of Newark, is the first woman physician to adopt the automobile, so far as known.



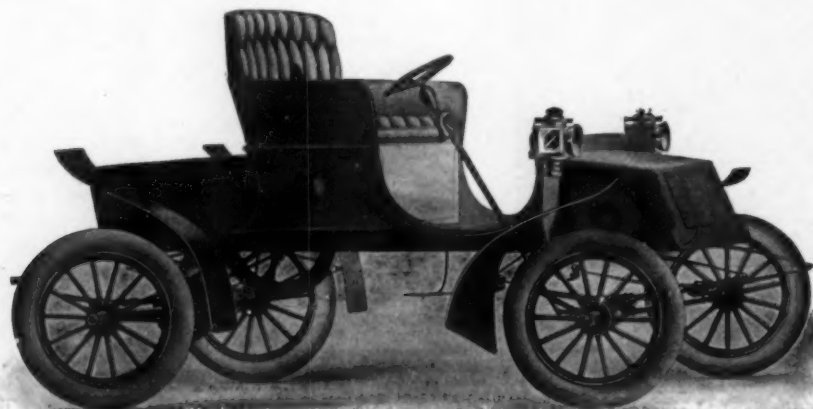
ALPHA LIGHT AMERICAN MOTOR IN FRONT ROAD CAR.

storage of clothing, parcels and extra parts. The motor starts from the seat, and one lever operates the change speed. The total weight of the car is 1,100 pounds. The machine is regularly finished with carmine body with black striping and a lighter red running gear, and is equipped with fenders, lamps and horn.

The Clarkmobile Company was organized in April, 1902, and continued the work of development of the automobile which E. G. Clark started about eighteen months before. The company is composed of A. C. Stebbins, president; H. E. Thomas, vice-president; F. G. Clark, secretary, treasurer and general manager; W. H. Newbrough, G. W. Knapp, C. D. Woodbury and H. D. Luce.

Premier Tonneau Car.

A new type of the familiar French tonneau is shown in the illustration of the Premier automobile, manufactured by the Premier Motor Mfg. Co., of Indianapolis. The power equipment consists of a two-cylinder 5-inch by 6-inch vertical engine, under the front bonnet, with mechanically operated inlet and exhaust valves and jump spark ignition. When on the road the speed of the engine is con-



CLARKMOBILE GASOLINE RUNABOUT BUILT IN LANSING, MICH.

trolled by a throttle governor, which acts as a hit and miss regulator when the motor is running idle. Sliding gears are used for transmission, which gives three speeds forward, with direct connection on the high speed and reverse. The changes are controlled by a single lever, which is fitted with an interlocking device so that it is impossible to change gears without first disengaging the clutch. The latter is of the cone shape and of large diameter. An up-to-date frame of pressed steel is used, suspended on semi-elliptic springs. The wheel base is 88 inches and the tread standard, the wheels being 34 inches in diameter with 3 1-2-inch clincher tires. Roominess and yet a compact model has been sought in design.

Washington Races Called Off.

Special Correspondence.

WASHINGTON, D. C., May 23.—The two days' automobile race meet which the Washington Association of Automobile Dealers had planned to hold on July 3 and



PREMIER GASOLINE STEEL FRAME TOURING CAR.

4 has been called off on account of the inability of the association to secure the use of a suitable track. The Brightwood track was partially promised the association, but the trotting association which controls this track decided to hold a trotting carnival there on July 4. This is a disappointment to Washingtonians, many of whom have never seen an automobile race. However, the dealers are planning to hold a race meet early in the fall and it will doubtless prove a big success.

Certificate of incorporation has been granted by the State of New Jersey to the Royal Automobile Co., with an authorized capital of \$250,000. The object is the manufacture of automobiles and the incorporators are Louis B. Dailey, Warren N. Akers and K. K. McLaren.

Disaster Ends the Paris-Madrid Race.

Fatalities on the First Stage of the Course Cause French Premier to Stop Race—Spanish Authorities Follow Suit—Gabriel Breaks All Records Paris to Bordeaux.

SUMMARY OF ONE DAY OF PARIS-MADRID RACE

Six persons killed, including three chauffeurs and three non-contestants.
Thirteen persons injured, including seven contestants, five assistants, and one spectator.
Greatest speed attained—88 3/4 miles an hour, by Louis Renault.
Highest average speed for full stage—66 miles an hour, by M. Gabriel.
First day's stage, Versailles to Bordeaux, won by Gabriel.
Car driven by Gabriel—Mors, fitted with Michelin Tires.
Total length of first stage—343 miles.
Gabriel's gross time—8 hours 7 minutes.
Previous record—8 hours 44 minutes, made by Fournier.
Fastest single mile covered in 48 seconds.
Race forbidden to continue on French soil by Premier M. Combes.
Continuation of race in Spain forbidden by Spanish Government.
Event may be continued at reduced speed as an excursion of tourists.
English motorists fearful of effect on Gordon Bennett Race.

Automobilists everywhere are aghast at the record of fatalities and injuries resulting from the accidents in the first day's run in the Paris-Madrid race last Sunday. So disastrous was the first stage of the event that orders were at once issued by the governments of both France and Spain forbidding the continuation of the race on the second and third days except at the regular rates permitted by the law. Six persons are dead and thirteen are severely injured through a dozen accidents, in most cases due to collisions that were apparently the result of insufficient guarding of the course and the lack of precautions in the way of warning competitors of blocked railroad crossings.

Nearly 250 competitors started at one minute intervals, beginning at 3.54 A. M., with a crowd of tens of thousands of spectators pressing against the soldiers' bayonet points to get a glimpse of the competitors.

Charles Jarrott, winner of the Paris-Vienna last year, was started first, and the last departure was at 6.45. M.

Gabriel, driving a Mors of 70 horse power weighing 1,000 pounds, made the fastest run to Bordeaux, the end of the first



STARTING FROM PARIS IN TOURIST SECTION OF PARIS-MADRID RACE.



MME. JULIETTE LOCKERT OF "LE CHAUFFEUR" ABOUT TO START.

records for the course, including that of Henri Fournier, made last year. His average speed was nearly 66 miles an hour. The highest speed attained was 88 3/4 miles an hour, by Louis Renault, who drove a 650-pound Renault of 30 horse power.

TIMES OF FIRST TEN ARRIVALS.

Following are the times of the first ten contestants:

M. Gabriel started in a Mors at 5:01 and arrived at Bordeaux at 1:08:31 1-5, his time being 5:13:31 1-5.

Louis Renault started in a Renault at 3h. 47m. and arrived at 12h. 14m.; time, 5h. 22m. 59s.

J. Salleron started in a Mors at 4h. 33m. and arrived at 1h. 13m. 1 4-5s.; time, 5h. 46m. 1 4-5s.

Chas. Jarrott started first in a De Dietrich at 3h. 54m. and arrived at 12h. 30m. 55s.; time, 5h. 51m. 55s.

J. B. Warden started in a Mercedes; time, 5h. 56m. 30 4-5s.

Baron Pierre de Crawher, in a Panhard-Levassor; time, 6h. 1m. 8 2-5s.

M. Voigt, in a Charron, Girardot & Voigt; time, 6h. 1m. 9 1-5s.

M. Barras, in a Darracq; time, 6h. 12m. 49 1-5s.

stage, 343 miles. He covered the distance in 8 hours, 7 minutes, breaking all previous

M. H. Rougier, in a Turcat-Méry; time, 6h. 16m. 7 4-5s.

M. Mouter, in a De Dietrich; time, 6h. 17m. 54 1-5s.

The elation among club men and other automobile enthusiasts that reached a high pitch as the early reports of the wonderful times made were received by wire from all the towns along the way, gave place to the deepest gloom as other dispatches telling of fatal accidents were received. No such series of disasters had ever before occurred in the automobile world.

MARCEL RENAULT NEARLY KILLED.

Marcel Renault was seriously injured by the overturning of his car in a ditch near Coubé-Vérac, about twenty miles from Poitiers. Coming to a crossing when the gates were down, he turned abruptly aside, ran into the ditch and the car collided with

(Continued on page 58a.)

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SATURDAY, MAY 30, 1903.

PARIS-MADRID DISASTER.

Following the disastrous termination of the Paris-Madrid road race, there comes a tornado of hasty denunciation from the autophobic press. To such lengths have the arm-chair critics gone that murder and suicide are charged to the race promoters and contestants. Whatever the result of the great race, the intent of the participants was above reproach, as a careful and fair-minded consideration of the facts will show. The previous contest of speed and skill—the Paris-Vienna race of 1902—was carried out without loss of life, and yet many of the contestants attained speeds about as high as those in the Paris-Madrid contest.

None more sincerely regret the sad fatalities of this year's contest than the sportsmen motorists of this and other countries. They will not, however, rashly denounce the participants in the Paris-Madrid race, nor the sport of road racing in general, as a consequence. When fuller details are obtainable, it may appear that the race management failed to carry out all possible precautions for safety. Thousands of soldiers were on duty for the protection of the motorists and other road users, and ample warnings seem to have been given the persons living along the route.

Contributory causes were doubtless the large number of contestants, and the short-starting intervals between the cars.

It is not improbable that future road racing will have to be on circular or straightway courses in which the road-bed has been treated with tar or crude oil, so that the dangers of dust will be eliminated. Where entries are so numerous some process of elimination will also be necessary, or the adoption of a system of trial heats.

It is to be hoped that no snap judgment on this deplorable affair will prevent the holding of the Gordon Bennett races as scheduled. Preparations for policing the Irish course are so thorough, and the number of starters is so small that, apart from the danger to the driver of breakdown, there is no likelihood of a repetition of the Paris-Madrid fatalities.

ECONOMY OF MOTOR TRUCKS.

Conservative to a degree, but certainly very sound, were the sentiments expressed by a business man who had devoted a day to become acquainted with steam and gasoline motor trucks at the Commercial Vehicle Contest in New York. He employs a considerable number of heavy electric vehicles in his own business in Boston and contemplates to use many more and also to extend his work to New York. He was sitting on a stone fence at 230th street, having dismounted from his automobile and was complacently but sympathetically contemplating the struggles of three of the trucks in the contest. "All your troubles come from overloading," he said. "You have too much enthusiasm for what your cars will do, and too little faith in their economy; and so you try to show too much. Those who pay the bills for hauling with horses don't ask for all the advantages that manufacturers of automobile trucks claim. They are satisfied with a safe small margin of economy if they may be relieved of troubles with horses. The margin may come on only in greater ability to take care of rush business on exceptional occasion or in the saving of feed bills in the dull season. That would be enough. I use only electric vehicles at present and when I got them I was told that they would go forty miles on one charge. I never let them go more than ten miles. I was told that the average load should not exceed 3,500 pounds. We make 2,000 pounds the maximum and 1,500 pounds the average. We never have any troubles, never any costly repairs, and having arranged our hauling on just this basis, we are served very well, indeed, and save a great deal as compared with the old methods. I should say, too, that speed is very expensive. All these trucks go too fast. Our trucks were equipped to go 12 miles per hour with light loads. All the new ones are now being arranged so they can't exceed six miles. There is no other way to make drivers go slow than to pre-

vent them from going fast by positive mechanical means."

According to this gentleman's version it is pernicious and misleading to have self-propelled trucks compete publicly on a "cost per ton-mile" basis, because the encouragement of large loads and relatively high speed simply shifts the expense from the road to the repair shop and from the investment to the depreciation fund.

SEEKS CONTROL OF RACING.

What influence the American Automobile Association shall exercise as a body controlling automobile racing in the United States will largely depend upon the degree of approval with which the new Amended Racing Rules, adopted by the executive committee of the association will be received by the clubs and racing promoters who have not so far shown signs of recognizing the association's authority to assume supreme command in such matters. The amended rules were given in full last week and will, it is understood, be submitted to the sanction of the association members at the special meeting called for Tuesday, June 2, 4 P. M., at 753 Fifth Avenue, New York.

Though the need of a controlling body is admitted by all who consider racing an important feature for the automobile development or a desirable means for money-making ventures, only a comparatively small number of the automobile clubs have expressed confidence in the A. A. A. by seeking membership under its banner, believing apparently that race meets may be held successfully under local autonomy, and that the sanction of records by a central body is a matter of no particular consequence.

In this respect the new rules may make or break the association, unless they are modified at the impending meeting, because they demand unqualified submission dating back to January 1, 1903, as a condition for entering cars at any meet whose promoters have obtained the A. A. A. sanction, excluding all who have raced anywhere at an unsanctioned meet. In other words, the present following of the association is used as a weapon to compel all others to follow it, and it may be doubtful whether the association has proved sufficient strength and ability in the past to gain headway by such methods.

In the rules, as they stand at present, the distinction between amateurs and professionals is left open, but the racing board of the association is clothed with authority "to determine who are and who are not eligible to compete," and to decide any point not covered in the rules "as it may consider advisable."

A popular element at local meets is alienated in the rules by omitting all reference to motor vehicles other than four-wheeled ones, thereby excluding motor bicycles and tricycles and even three-wheeled motor cars, such as the Duryea.

The latter are thereby also excluded from competition with four-wheeled cars of their own class.

Under Classification the rules divide vehicles according to their weight and permit a division according to horse power, as well, in what is termed Class B. In Class A the cars are not subject to rules affecting their equipment or construction (except the four-wheel rule), but those in Class B "must be equipped with double-acting brakes, compensating and reversing devices, body and hood sufficient cover mechanism and provide accommodation for one person alongside of the operator." This class seems therefore intended to comprise vehicles as they are sold from stock, while Class A gives more latitude. In both classes it is possible to avoid the weight classification by entering all cars under sub-class 1, which includes all weights.

The referee of a race meet shall act as representative of the racing board, and shall have absolute power to prohibit any car which he considers unsafe, unsuitable or of improper construction from starting in any event.

Promoters, including clubs, who are not members of the A. A. A., shall pay \$50 for a sanction, while members shall pay only \$10.

Women's Club of G. B. & I.

An automobile club exclusively for women has been organized in London, by some of the most aristocratic ladies of the land. The Duchess of Marlboro has been slated for the presidency, Lady Cecil Scott-Montagu, Lady Beatrice Rawson and Mrs. Adair are vice-presidents, and Lady Canteloupe is honorary treasurer, according to the European edition of the *Herald*. Headquarters of the club have been selected at 110 Piccadilly, only a few doors from the Automobile Club of Great Britain and Ireland, to which it is closely allied by blood and marriage ties of the members, if not officially. The new organization is to be known as the Ladies' Automobile Club of Great Britain and Ireland. The A. C. of G. B. and I. has put up a substantial guarantee to enable the ladies to take immediate possession of the new quarters, and the use of the garage of the men's club will be accorded to the ladies temporarily.

Gordon Bennett Preparations.

Preparations for the Gordon Bennett race along the Irish course are being pushed forward vigorously so as to have everything in readiness on the day set for the race—July 2. A number of improvements have been made in the road, both as to the improvement of its surface and also in straightening some of the turns. Hotel accommodation in the Irish capital has been largely taken up and it is expected that an enormous number of visitors will be in attendance during the automobile fortnight.

Entries for Empire Track, Yonkers, N. Y. Race Meet, May 30.

In addition to Barney Oldfield and C. G. Wridgway, who will ride a match race on the Ford and Peerless racing cars, the following entries are announced for the Decoration Day races at the Empire City race track at Yonkers, N. Y.:

Five mile open, for gasoline machines over 1,800 pounds, Wridgway and Oldfield machines barred.—J. Insley Blair's 35-horse power Panhard, Joseph Tracy, operator; Central Automobile Co.'s 18-horse power Mors, Lafayette Markle, operator; C. G. Wridgway's 16-horse power Peerless; Commercial Motor Co.'s 20-horse power Pan-American, B. F. Bradley, operator.

Three mile open, for gasoline machines, 1,000 to 1,800 lbs.: Central Automobile Co.'s 11-horse power Mors, Lafayette Markle, operator; J. C. Brandes' 12-horse power Cudell, Robert Piccoli, operator; Albert C. Bostwick's 18-horse power Mercedes, A. C. Bostwick or D. D. Murphy, operator; J. Insley Blair's 35-horse Panhard, Jos. Tracy, operator; Wm. Walter's 30-horse power Walter's car; P. J. Fisher's 30-horse power Walter's car; F. A. La Roche's 30-horse power Darracq; O. H. Keep, Jr.'s 12-horse power, F. I. A.

T. Italian car; L. E. Holden's 12-horse power Darracq.

One mile, open to all types of machines, under 1,000 pounds—Dr. A. L. Nelden's 5-horse power Northern; E. J. Willis' 4-horse power Orient, J. W. White, operator; J. C. McCafferty's 4-horse power Locomobile, Frank Schumacher, operator.

Five mile, motor bicycle amateur championship—Wally Owen (Indian 1 $\frac{1}{4}$); Fred A. Baker (Indian 1 $\frac{1}{4}$); Frank P. Baker (Indian 1 $\frac{1}{4}$); Fred W. Rogers (Indian 1 $\frac{1}{4}$); H. E. Whitehouse (Warwick 1 $\frac{1}{4}$); G. H. Curtis (Curtis 5); E. J. Willis (Merkle 1 $\frac{1}{4}$); Chas. G. Arnold (Orient 3); Chas. Gustafson (Indian 1 $\frac{1}{4}$); Geo. N. Holden (Indian 1 $\frac{1}{4}$); Chas. G. Embleton (Indian 1 $\frac{1}{4}$); Wm. F. Murphy (Mitchell 3 $\frac{1}{2}$); Wm. P. Dugan (Orient 3); James R. Ready (Orient 2 $\frac{1}{4}$).

One mile record trial, open to all machines—J. Insley Blair's 35-horse power Panhard, Jos. Tracy, operator; Central Automobile Co.'s 18-horse power Mors, Lafayette Markle, operator; Albert C. Bostwick's 18-horse power Mercedes, A. C. Bostwick or D. D. Murphy, operator; C. G. Wridgway's 16-horse power Peerless; F. A. LaRoche's 30-horse power Darracq.

INDIANAPOLIS EXPECTS RECORD- BREAKING MEET MAY 30.

Special Correspondence.

INDIANAPOLIS, May 25.—The A. A. A. has granted a sanction for the Memorial Day races to be held at the fair grounds by the local dealers, and the races will be conducted under the new rules recently adopted by the association.

The principal event will be the contest between Earl Kiser, of Dayton, and Tom Cooper, with his "999" machine. They are under contract to do the five miles at a speed of 1:10 or better for every mile, and a purse of \$1,000 will be the incentive to cause them to get the very best speed out of their machines. The rivals will be at the fair grounds early this week to put their cars through the paces and familiarize themselves with the track. Entries for the other events are being received daily. Local interurban roads as well as the railroads have agreed to offer reduced rates to Indianapolis on May 30, and the meet posters will doubtless appeal to the ruralists, so there is every reason to believe that Indianapolis will have a record-breaking crowd that day.

NEW SPEED ORDINANCE IN FORCE.

The speed ordinance, which limits the speed in downtown districts to eight miles an hour, and outside of the mile square to twelve miles per hour, is now in effect,

and the police have been instructed to enforce the ordinance literally and arrests are expected. Operators thus far have been disposed to look upon the ordinance as a sort of joke and have disregarded it.

A series of trials have recently been completed by the London General Omnibus Company of a large power-driven bus built on the Fischer system, in Hoboken, N. J. The bus carried thirty persons, eighteen on the outside, ten inside and the driver and conductor. The average speed attained was much greater than with horse-drawn buses, and it was found that the bus was very manageable, the wheel-steering mechanism enabling some clever work to be done in the crowded streets. On the road selected there was a stiff hill leading from Richmond Bridge, on which the vehicle took its full load without any delay. The test was made without a skilled operator, the man who ran it on this occasion being a regular bus driver. The Fischer system includes the use of a gasoline engine coupled direct to a dynamo, which furnishes current direct to the motors and a storage battery, as may be desired in operation. Last year we published an extensive description of a vehicle of this type in the service of a large brewery in New York. The trials of this bus were so satisfactory that it is likely that an increased use of power-drawn buses will be made.

(Continued from page 579.)

a tree with great violence. Renault was picked up apparently in a hopeless condition and was at first reported to have been killed outright, but afterward this was officially denied and later that night his brother Louis Renault telegraphed that Marcel was better, and that they were bringing him to Paris. He did not regain consciousness for four hours after the accident, however. Louis Renault, who was the first contestant to reach Bordeaux, immediately started back upon receipt of the news and gave orders that all Renault machines be withdrawn from the race. Marcel Renault's brother-in-law, Dr. Soupault, took charge of the case. Madame Renault, wife of the injured man, was prostrated by the false dispatch announcing his death. The machinist who accompanied Renault on his car escaped with severe cuts.

NIXON BURNED UNDER CAR.

The worst disaster of the day occurred near Chartres, where the car driven by Mr. Porter, who was accompanied by Mr. Nixon, both of Belfast, Ireland, struck the guard's hut at a railroad crossing. The impact overturned the machine, throwing the occupants out with Mr. Nixon pinioned beneath it, and then caught fire. The guard tried to rescue Nixon but could not on account of the flames of the burning gasoline, and the body was incinerated. Fortunately the victim had been killed by the fall and was saved the agony of being burned alive. Mr. Porter, who remained unconscious for several hours, was very badly burned, but will recover. Nixon was a well-known North of Ireland bicyclist who had recently taken to motor-ing.

FATAL COLLISION WITH A TREE.

In attempting to avoid running over a dog at a level crossing at Libourne, twenty miles from Bordeaux, Lorraine Barrow lost control momentarily of his car, which slewed around and struck against a tree with terrific force. His chauffeur, Roderiz Pierre, was instantly killed and Barrow himself was picked up unconscious and removed to a hospital, where it was found that his pelvis and one thigh had been fractured. His injuries were at first thought to be fatal, but later reports state that at 2 o'clock in the afternoon he was no worse and the doctors hoped to save his life by amputation. His car was a hopeless wreck.

WILLIAM STEAD HURT BY UPSET.

William F. Stead, the noted writer, collided with another car that he was trying to pass at Mont Guyon and both machines were overturned. Mr. Stead was caught under his car and was so severely hurt that he was removed to the hospital. His machinist was hurled thirty feet and had his head and body badly cut. First reports announced that Mr. Stead was killed, but the latest advice is that he has im-

proved so much that it is thought he may be able to leave the hospital in a week. He was conscious when rescued but complained of suffering intensely.

THE MOST FATAL ACCIDENT.

An accident that proved fatal to on-lookers happened two miles out of Angoulême, where the car driven by M. Tourand ran into a tree and in overturning fell upon two soldiers and a child, killing all three. Tourand's assistant was fatally injured and died later. Tourand was severely bruised but will recover.

At Ablis a racing machine ran into an old peasant woman who was crossing the road and killed her instantly.

A peculiar accident was occasioned at Andre de Cubzac, near Bordeaux, by a horse which, becoming frightened by the passage of the racing machines, bolted and upset Mme. Chaysses, who, with her husband, was cycling on the Libourne road to watch the race. The woman fell in front of one of the contesting cars, which passed over her, crushing both of her legs so badly that it was feared she would die.

SOME MINOR ACCIDENTS.

Georges Richard, presumably the manufacturer of the cars that bear that name, had several ribs broken by the overturning of his car.

Lucien Lesna, the long-distance bicycle rider, fell from a motor bicycle and broke his left knee.

Baron de Caters' machinist was thrown into a ditch near Poitiers and his face was badly cut, but he nevertheless continued in the race.

SOME NARROW ESCAPES.

Henry Farman, one of the noted Farman brothers, had a miraculous escape in an accident that smashed his machine but from which he did not receive a scratch.

An American driver named Terry, who was piloting a 60 horse power Mercedes, entered the village of Coignieres at seventy miles an hour, and in order to pass the car of L. Porter, which was just ahead, drove up on the sidewalk. One of his front tires burst and his car skidded sideways for 300 yards, moving diagonally across the road in front of Porter's car. Then the tank broke and instantly Terry's machine burst into flame. Terry, who sat apparently stupefied, was rescued by his chauffeur and then gave way under the nervous strain and sobbed like a child. Neither he nor his helper were hurt.

Randolphe Darzens and his machinist were thrown out of their car near Bordeaux and though the car was practically destroyed, they were almost uninjured.

VANDERBILT BROKE DOWN.

William K. Vanderbilt, Jr., was almost kept from starting by the officials because he was delayed by the crowd in getting to the starting point on time, but was permitted to start, which he did at a speed that made the spectators gasp. He passed

Rambouillet twenty-eighth in order, going well, and then his name was missed from the list at Chartres, the next town. After some anxiety, it was learned that while going at full speed the cylinder head of his car blew out, a piece of the metal passing within a few inches of his head. Though angry at first, he congratulated himself later that he had been unable to continue in the fatal race.

Henry Fournier and Baron de Forest also withdrew at Chartres owing to damaged cylinders.

"THOSE LUCKY AMERICANS."

Clarence Gray Dinsmore, who entered under the name of M. Werner, broke down at a small place beyond Chartres and was obliged to withdraw. At the time he was the only American left in the contest. Foxhall Keene, Tod Sloan and W. V. Dannat, who had entered, were late in arriving at Versailles and were not permitted to start. Incidentally it is reported that Foxhall Keene has been chosen by the German Automobile Club to drive one of the Mercedes cars in the Gordon Bennett race in Ireland on July 2.

It is not considered likely that the Parliamentary sanction given to the Irish contest will be revoked now, but there is no doubt that in the future such sanctions for motor car races will be more difficult to obtain.

THE TOURIST SECTION.

Good weather favored the start of the tourist section of the Paris-Madrid race at 7 o'clock on May 13. A considerable crowd assembled at an early hour in the Place de la Concorde, Paris, to see the start. Fifty-eight vehicles had been entered, and before 8 o'clock twenty had started, each carrying a French and a Spanish flag in front, and at the rear a shield bearing the number allotted to the vehicle and the words in French "Excursion, Paris to Madrid." The first to get away was M. Tranchant, in a 12 horse power Gladiator tonneau. Before noon forty-five vehicles had departed.

The tourist section did not follow the same route as that of the speed section, and the trip was made in short stages, the speed being kept within the regular legal limits. The stages were as follows:

Thursday—Paris to Pougues, with permission to proceed to Royat.

Friday, Saturday and Sunday—Royat to Agen.

Monday and Tuesday—Agen to San Sebastian.

Wednesday—Rest at San Sebastian.

Thursday—San Sebastian to Bilbao.

Friday—Bilbao to Vittoria.

Saturday—Vittoria to Burgos.

Sunday—Burgos to Valladolid.

Monday—Valladolid to Salamanca.

Tuesday, May 26.—Salamanca to Madrid.

Cortlandt F. Bishop has been admitted as member of the Automobile Club de France.

SUPPORT FOR NEW YORK-CHICAGO RUN IN SEPTEMBER.

Special Correspondence.

CHICAGO, May 25.—A committee of the Chicago Automobile Club headed by A. C. Banker, whose colleagues are Charles E. Barkley and W. D. Hibbard, is in charge of arrangements for an endurance contest from New York to Chicago, which it is hoped to hold so that the finish may be a feature of Chicago's Centennial celebration, in September.

No details of the contest have been agreed upon. Mr. Banker said yesterday: "I have been unable to secure much attention from the Automobile Club of America, owing to their interest being taken up by the Bailey law, but I have received assurances from Albany, Rochester, Syracuse, Buffalo and Toledo that the clubs in those places will enthusiastically support the contest and give their assistance toward its success. I hope that it will be possible to secure the co-operation of the A. C. A. and complete arrangements so the contest may be held in September. It is probable the speed will have to be limited to twenty miles an hour in the country and a slower mark in the cities. The contest will probably last four or five days."

Whether it is possible to arrange the contest or not, the centennial celebration in Chicago will be marked by an automobile carnival to which the clubs of cities within a radius of 200 miles will be invited. The events will include speed contests on the boulevards and a parade in the parks in which prizes will be given for the most handsomely decorated cars.

RECEIVER FOR AMERICAN MOTOR CARRIAGE CO.

Special Correspondence.

CLEVELAND, May 25.—Cleveland has had its first failure of an automobile manufacturing concern. Last Friday George F. McKay, president of the American Motor Carriage Co., made application in Common Pleas Court that a receiver be appointed for the company. He claimed that the company was indebted to him on a note for \$1,000 and that it also owed him \$2,000 as salary. In addition to this he claimed that the company owed other debts to the extent of \$30,000 which it could not meet. He claimed that the company had on hand partly completed automobiles which in six weeks and at an expense of not to exceed \$10,000 could be completed and would be worth at least \$40,000. He said that owing to patents the machines could not be made by any other than the company or by a receiver.

In an answer filed at the same time the application was made the company admitted its indebtedness and agreed to the appointment of a receiver, and the court appointed the Prudential Trust Company.

An official of the company informed the

writer that the company had been doing an excellent business and had a large number of orders on hand, but that through lack of factory space and inability to secure prompt deliveries of material it had been unable to make deliveries as promptly as had been expected, which made impossible early collections on goods produced.

AUTO AGENTS SUED FOR FAILURE TO DELIVER MACHINE.

Special Correspondence.

WASHINGTON, D. C., May 25.—Proceedings have been instituted by Samuel J. Masters against Albert L. Kull and Robert L. Van Dusen to recover damages for an alleged breach of contract for the sale of an automobile by the defendants, and for an attachment upon the property of the defendants, before judgment, in accordance with the provisions of the new District code.

Masters alleges in his bill of complaint that on March 28 last, he purchased an automobile from the defendants upon which he paid \$475; that the machine was to be delivered to him by April 4, 1903, which Kull and Van Dusen have failed to do. He further states that he has not received back the money paid for the machine, and that, therefore, he is entitled to damages. Both of the defendants are said to be non-residents of the District, but have personal property, consisting of other automobiles, in the District. In such cases the code allows the issuance of an attachment in advance of judgment upon supporting affidavits, and a deputy marshal has therefore levied upon three automobiles said to be the property of the defendants at the Willard Automobile Station.

Milwaukee Show Abandoned.

Special Correspondence.

MILWAUKEE, May 22.—The proposed local show which was to open on May 11 was abandoned at the eleventh hour. There is still some talk of carrying out the plan, previously agreed upon by the dealers, later in the season. There are several reasons for the failure of the project. Several dealers objected to the lack of proper advertising, while others raised the objection that they were not given notice sufficiently in advance to enable them to get machines they desired to place on exhibition.

Program of Dayton Race Meet.

Special Correspondence.

DAYTON, Ohio, May 25.—The Dayton Automobile Club has perfected its program for its Decoration Day race meet to be held on the Fair Ground race-track. About thirty entries have already been sent in and judging from the interest which the event is attracting, there will be a large attendance. The program includes a 2-mile race for electrics, a 3-mile race for gasoline cars weighing 1,000 pounds or less, fully equipped; 3-mile for same

stripped or otherwise; 2-mile for steamers; 5-mile for motor cycles; 3-mile for gasoline cars weighing 1,500 pounds or less, fully equipped; 3-mile for same stripped or otherwise; 5-mile open for all machines; 3-mile for gasoline cars weighing 2,000 pounds or less, fully equipped; 3-mile for same stripped; 5-mile for gasoline cars weighing 2,000 pounds or more, fully equipped; 5-mile for same stripped; pursuit race for three machines making best times during the day.

All machines entered except in open and pursuit races must be regular stock models.

Connecticut License Blanks Ready.

Special Correspondence.

NEW HAVEN, May 25.—The Secretary of State has prepared suitable application blanks and licenses in accordance with the automobile law recently passed by the Legislature and signed by the Governor on May 15. The law requires all automobiles in the State to be registered with the Secretary of State by July 1, 1903, and that the number of the certificate issued to the owner shall be displayed in a conspicuous place upon the back of the vehicle, preceded by the letter C, the letter and figures to be at least three inches high. The application blank reads as follows:

STATEMENT

Of Owner of Automobile.

Name
Address
Description of Vehicle.
Trade Name.
Style (Runabout, Tonneau, Surrey, Phaeton.)
Seating capacity.
Motive power.
Made by
Dated at.....190..

When the owner of an automobile or motor vehicle has filled out the above blank and filed it with \$1 with the Secretary of State he will receive in return a certificate properly filled out and signed as follows:

Certificate No.

STATE OF CONNECTICUT.

Office of the Secretary.

This is to Certify, that.....
of.....Connecticut, owner of
a..... filed in this office on
the..... day of.....190.., a
statement of his name and address with a
description of the character of such

pursuant to the provisions of Section 2 of Chapter 107 of the Public Acts of 1903.

In witness whereof I have hereunto set my hand and affixed the (Seal.) seal of the State of Hartford, this.....day of.....1900..

News and Trade Miscellany.

The Ohio Oldsmobile Co., of Cleveland, has established a branch in Toledo for the purpose of handling the Oldsmobile, with Charles M. Hall, of Toledo, in charge.

Charles F. Grout, a bicycle and automobile dealer of Worcester, Mass., has taken the local agency for the Hoffman automobile, made by the Hoffman Automobile & Mfg. Co., of Cleveland.

The St. Marys Wheel & Spoke Co., incorporated under the laws of New York, has been authorized by the Secretary of State to transact business in Ohio. The office will be at St. Marys.

Foster & Co. have accepted the Cleveland agency for the Rodgers & Thatcher touring car, in addition to the Peerless and General. The R. & T. cars will probably be ready for delivery about July 1.

The Packard Motor Car Co., of Warren, Ohio, has appointed the Pence Automobile Co., of 315 South Third Street, Minneapolis, and Joy Bros., 4th and Wabasha Streets, St. Paul, as its agents for the respective cities.

A branch store has been opened in Philadelphia at 262 N. Broad street, by the American Darracq Automobile Co., of New York, which has sent several handsome automobiles ranging from 9 to 25 horse power to the new store.

The Midgley Manufacturing Co., of Columbus, Ohio, has filed notice with the Secretary of State of an increase in capital stock of \$100,000, making the present capital \$200,000. The business will be enlarged and pushed energetically.

The Tivy Cycle Company, of Williamsport, Pa., which has manufactured bicycles for several years, has gone out of existence and has given place to the L. Maxwell Company, which has begun the manufacture of automobiles and carriages.

Judge Thayer, in the Superior Court for Middlesex county, Conn., has ordered the sale of the uncollected claims and accounts of the Keating Wheel & Automobile Co. against the Diamond Wheel Co. and the Eisenhuth Horseless Vehicle Co. before June 15, and the other accounts on June 17. The final report of the receiver is to be filed in the September term of the Superior Court.

The Orient Motor Buckboard Agency has been organized in Cleveland, with headquarters in the American Trust Building, to handle the Waltham Mfg. Co.'s Buckboard in the entire territory west of Buffalo. The interested parties are connected with the Federal Mfg. Co. The business will be handled through traveling men and the output will be sold to the trade exclusively by this agency. The Carpenter Co., in the Society for Savings Building, will handle the machines locally in Cleveland.

Cuyler M. Lee, San Francisco agent for the Cadillac Automobile Company, has established himself with the Western Automobile Co., on Larkin Street, San Francisco, opposite the new City Hall.

Incorporation papers have been secured for the Colorado Springs Automobile Co., which will do business in Colorado Springs, El Paso and Arapahoe Co., with authorized capital of \$30,000. Its incorporators are E. E. Wade, E. S. Robinson and B. E. Wade.

The Springfield Tire & Rubber Co., of Springfield, Ohio, has been incorporated with a capital stock of \$75,000 for the purpose of manufacturing rubber tires and other goods. W. H. Smith, H. L. Slager, O. W. Smith, John Garnier and Eugene Garnier are the incorporators.

Articles of incorporation for the Philadelphia Automobile Co. have been filed with the New Jersey secretary of state. Its capital is \$50,000. The incorporators are: Edward E. Zeigler, Edwin L. Hoffman, Thomas J. Mahoney, Robert H. Pflugfelde and William Vees.

Harry H. Picking, Gardner W. Kimball and Charles A. Greene are named as the incorporators of the Automobile Company of New Jersey, whose articles of incorporation have been recorded at the County Clerk's office in Newark. The authorized capital stock is \$100,000.

Certificate of incorporation has been granted to the Goodson Electric Ignition Co. by the Secretary of State of New Jersey. The incorporators are W. Monds Greene, Chris V. Feddersen and R. Irving Outwater. The object is the manufacture of electrical devices and the capital stock is \$50,000.

The involuntary bankruptcy proceedings of the New Process Lubricating Company, of Buffalo, were completed recently before Referee Hotchkiss. Having fulfilled his duty the trustee was discharged. When the proceedings were started the liabilities of the firm were \$2,584.97. After the properties and effects of the company had been sold and all accounts settled and expenses paid, the trustee reported that the creditors would receive 100 cents on the dollar.

The Country Club Car Co., of Boston, has purchased the plant of the J. H. Long Machine Co., in South Boston, to be used as an automobile manufactory. The transfer placed on record conveys to the company a brick and frame building of mill construction, three stories high and 350 by 157 feet in size at the corner of L and First streets, and a total land area of nearly 40,000 square feet, the price paid being nearly \$50,000. It is proposed to erect on the vacant land another building much larger than the present one.

The Franklin Mfg. Co. will in a few days take up the matter of building a new factory in connection with its new building in Syracuse. It is proposed to duplicate the present factory, which was taken possession of last winter.

The Columbus Motor Vehicle Co., of Columbus, Ohio, has moved into a three-story brick building originally used as a watch factory. The building itself is conveniently arranged and well lighted, and is now fully equipped for the manufacture of automobiles, so that the company will shortly turn out a largely increased number of cars.

A company with a capital of \$3,400,000 has been organized in Milwaukee to take over the business and property of the Christensen Engineering Company. The new concern will be known as the National Electric Company, of Milwaukee. The incorporators are Frank G. Bigelow, Samuel W. Watkins and Henry Goll. Other stockholders are R. T. Tell and Arthur N. McGeogh. The company will manufacture motors, generators, alternators and other electrical machinery. About 500 men are now employed in its factory, and this number will be increased, and officials say that the factory will be enlarged to double the capacity.

Members of the Massachusetts Automobile Club and local automobilists outside the club have been trying out their machines at the Readville track, Boston, during the past week, preparatory to the race meet there May 30. The fastest work in this practice has been shown by Harry Fosdick, with a Winton racer. He has made miles in 1:26 2-5, and 1:26, this being about thirty seconds better than the horse record on this track. The Readville track has been used entirely for horses heretofore, but is in prime condition and is believed to be faster than the Narragansett Park track on which the Rhode Islanders have had some very successful automobile meets.

The United States Auto-Motor Co., which was incorporated under the laws of Rhode Island on April 18, began business in Attleboro, Mass., on April 20 under patents formerly owned by the United States Automobile Co., whose property had been sold to Walter H. Barney a few days previously. The new company was incorporated with \$90,000 capital stock by Frank Mossburg, Homer M. Daggett, Jr., and Walter H. Barney. In addition to the property of the United States Automobile Co., the new concern has bought parts of four gasoline automobiles that were being built for the Webster Automobile Co., but which were sold to Mr. Daggett at sheriff's sale a month ago. The motors for the new company will be made by the Frank Mossberg Co., and the bodies will be built in an Amesbury carriage shop, whose proprietors are financially interested in the United States Auto-Motor Co.